TEXTILE TECHNOLOGY DIGEST

VOL. 8 MAY 1951 NO. 5

Abstracts

(An explanation of the classification used in the Digest was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors)

FIBERS A

Natural fibers A 1

American long staple equal to Egyptian

Anon. *Daily News Record 42,* 25 (Mar. 1, 1951).

National Cotton Council Survey shows American extra-long staple varieties equal or surpass strength of Egyptian cottons. Data given on American "Amsak" fiber and comparisons made with Karnak.

Bast fiber structure

Walther Rudiger. *Melliand Textilber 32,* 7-9 (Jan. 1951); *in German.*

The histological conditions at the point of vegetation of the flax plant are described. The bast fibers, which originate from the procambium and in their first stage of growth have the form of common plant cells, are formed simultaneously with the incipient differentiation of the inner organs of the stalk. They acquire their definite length and wall thickness only through subsequent growth. The fiber bundles' longitudinal deployment and their arrangement in the stalk are described and their bearing on industrial processing are discussed.

California's new cotton shows big improvement

Chas. F. Goldthwait & Herbert O. Smith. *Textile World 100,* 127, 310, 312, 314, 316 (Sept. 1950).

California's 1949 acreage of cotton was planted in a new Acala cotton, known as 4-42. Some of the advantages which this cotton had over Acala P-18-C were demonstrated in tests of sample bales carried out at the Southern Regional Research Laboratory in cooperation with the School of Textiles of North Carolina State College. Single samples cannot be taken as necessarily representing typical cottons of their varieties for another year, but the results indicate the direction of development of California cotton. In the cloth made from the 4-42 cotton the number of neps was reduced by nearly one-half; and strength of the fiber, yarn, and cloth was consistently greater than for the Acala P-18-C or for a sample of a rain-grown Deltapine 14. The 4-42 sample cotton was also better adapted to mercerization than the Acala P-18-C; and this process performed ahead of dyeing caused the neps to color normally.

Cotton firm to conduct fiber tests

Anon. *Daily News Record,* 16 (April 5, 1951).

See front section.

Cotton waste

George H. Dockray, Barkley Meadows & Leonard Smith. *Textile Res J. 20,* 648-718 (Oct. 1950).

To present information on the size and nature of the cotton waste industry, on the factors influencing waste markets, on methods for controlling waste, and to point out opportunities for progress in this field through research is the objective of this report. In 1948, in the United States the 642 million pounds of cotton waste produced had a value at the mill of $71,000,000. The average carded yarn mill removes as waste about 15 percent of the raw cotton; the average combed yarn mill about 30 per cent. About 70 per cent of waste is fiber, the rest motes, bits of leaf and stem, dust, and similar foreign matter. About 13 percent of total waste is used in the mill; the remainder sold to a dealer; prices ranging (in 1948) from less than 1 cent per pound to as much as 24 cents. In a typical carded yarn mill (in 1948) raw material eliminated as waste cost about 4.5 cents per pound of cotton processed, not counting labor. Cleaned cotton waste is spun alone or used in blends with raw cotton

TEXTILE TECHNOLOGY DIGEST is published monthly by the Institute of Textile Technology, Charlottesville, Virginia. In preparing these abstracts, the editorial staff seeks to report correctly the contents of the original papers without reflecting the views of the staff or the members of the Institute. Printed in the U. S. A. Copyright 1950 by the Institute of Textile Technology.

TEXTILE TECHNOLOGY DIGEST

VOL. 8 MAY 1951 NO. 5

Abstracts

(An explanation of the classification used in the Digest was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors)

FIBERS A

Natural fibers A 1

American long staple equal to Egyptian

Anon. *Daily News Record 42,* 25 (Mar. 1, 1951).

National Cotton Council Survey shows American extra-long staple varieties equal or surpass strength of Egyptian cottons. Data given on American "Amsak" fiber and comparisons made with Karnak.

Bast fiber structure

Walther Rudiger. *Melliand Textilber 32,* 7-9 (Jan. 1951); *in German.*

The histological conditions at the point of vegetation of the flax plant are described. The bast fibers, which originate from the procambium and in their first stage of growth have the form of common plant cells, are formed simultaneously with the incipient differentiation of the inner organs of the stalk. They acquire their definite length and wall thickness only through subsequent growth. The fiber bundles' longitudinal deployment and their arrangement in the stalk are described and their bearing on industrial processing are discussed.

California's new cotton shows big improvement

Chas. F. Goldthwait & Herbert O. Smith. *Textile World 100,* 127, 310, 312, 314, 316 (Sept. 1950).

California's 1949 acreage of cotton was planted in a new Acala cotton, known as 4-42. Some of the advantages which this cotton had over Acala P-18-C were demonstrated in tests of sample bales carried out at the Southern Regional Research Laboratory in cooperation with the School of Textiles of North Carolina State College. Single samples cannot be taken as necessarily representing typical cottons of their varieties for another year, but the results indicate the direction of development of California cotton. In the cloth made from the 4-42 cotton the number of neps was reduced by nearly one-half; and strength of the fiber, yarn, and cloth was consistently greater than for the Acala P-18-C or for a sample of a rain-grown Deltapine 14. The 4-42 sample cotton was also better adapted to mercerization than the Acala P-18-C; and this process performed ahead of dyeing caused the neps to color normally.

Cotton firm to conduct fiber tests

Anon. *Daily News Record,* 16 (April 5, 1951).

See front section.

Cotton waste

George H. Dockray, Barkley Meadows & Leonard Smith. *Textile Res J. 20,* 648-718 (Oct. 1950).

To present information on the size and nature of the cotton waste industry, on the factors influencing waste markets, on methods for controlling waste, and to point out opportunities for progress in this field through research is the objective of this report. In 1948, in the United States the 642 million pounds of cotton waste produced had a value at the mill of $71,000,000. The average carded yarn mill removes as waste about 15 percent of the raw cotton; the average combed yarn mill about 30 per cent. About 70 per cent of waste is fiber, the rest motes, bits of leaf and stem, dust, and similar foreign matter. About 13 percent of total waste is used in the mill; the remainder sold to a dealer; prices ranging (in 1948) from less than 1 cent per pound to as much as 24 cents. In a typical carded yarn mill (in 1948) raw material eliminated as waste cost about 4.5 cents per pound of cotton processed, not counting labor. Cleaned cotton waste is spun alone or used in blends with raw cotton

TEXTILE TECHNOLOGY DIGEST is published monthly by the Institute of Textile Technology, Charlottesville, Virginia. In preparing these abstracts, the editorial staff seeks to report correctly the contents of the original papers without reflecting the views of the staff or the members of the Institute. Printed in the U. S. A. Copyright 1950 by the Institute of Textile Technology.

or other fibers. In end uses competition is principally with cotton and cotton linters. Uses include, as examples, mattress felts, stuffing for toys, mop yarns, tobacco shade cloth. Many cotton mills are improving the efficiency of handling and sorting techniques to keep waste at the minimum consistent with high quality and smooth operation. Research to improve the separation of fiber from the other waste ingredients, to reduce the amount of fiber removed as waste, and to improve mill testing and control measures should benefit the textile industry.

Demonstration of the presence of a galacto-araban in raw cotton

John D. Guthrie & Wilson A. Reeves. *Textile Res. J. 20,* 859-861 (Dec. 1950).

When an aqueous extract of raw cotton fiber was deionized, evaporated under reduced pressure, and precipitated with ethanol, the precipitated material contained a galacto-araban, since galactose and arabinose were the principal sugars in the hydrolyzate, as was demonstrated by paper chromatography. Galactose was verified by formation of mucic acid and arabinose by the formation of its diphenylhydrazone, the derivatives being identified by their x-ray diffraction patterns.

Determination of pectic substances in cotton Colorimetric reaction with carbazole

S. M. Stark, Jr. *Analyt. Chem. 22,* 1158-1160 (Sept. 1950).

A colorimetric method for the determination of pectin materials in cotton is described. It involves the extraction of the pectic substances from the cotton and the reaction of the resultant pectic acid solution with sulfuric acid and alcoholic solution of carbazole to give a colored solution. A quantitative value is obtained by photometric comparison of the color developed by the sample with that of a series of standards made with galacturonic acid monohydrate. The result is expressed as percentage of anhydro-galacturonic acid, the basic group in the pectic polyuronide.

Introducing new cotton products

James A. Kime. Eleventh Cotton Research Congress, Proc. Dallas, Texas, 87-93 (July 27-28, 1950).

The application of research to improve the competitive position and widen the utilization of cotton is illustrated by the development of superior heat- and rot-resistant cotton by a process

of acetylation; the production of a new soluble cotton yarn; the treatment of cotton bagging with small amounts of pyrethrin to repel insects; the possibility of making attractive dresses, slip covers, and other products out of low-priced osnaburg finished by modern processing procedures; and the use of a new loom attachment to produce dense, tightly woven fabrics with superior resistance to wind and rain. Another example is a discovery made at the Institute of Textile Technology, Charlottesville, Virginia, in research performed by contract for the Department of Agriculture: that cotton goods resist soiling better and wash easier when carboxymethyl cellulose is used in the rinse water.

Modern view of fibre structure

A. J. Hall, *Textile Mercury and Argus 124,* 3229 (Feb. 23, 1951).

The textile student of 50 years ago and even within more recent years was definitely taught that cellulose was a colloidal substance and as such was considered to be in a class of substances quite different from those commonly spoken of as being crystalline. It was considered that there was no similarity between the structure of cotton and viscose rayon fibres and that say of Glaubers salt or Epsom salt. Yet since those times so great have been the changes in our conception of the fine structure of cellulose that it is now common to correlate the various properties of cellulose fibres with the relative proportions of crystalline and amorphous cellulose which they contain. From a knowledge of the crystalline character of a cellulose fibre it is possible to make fairly accurate deductions concerning its tensile strength, reactivity towards dyes, ability to absorb moisture, and its general reactivity towards chemicals of various types including those of a destructive nature.

Discussion of this modern view treats it from these angles: recent research on cellulose fibres; the crystallinity of cellulose; merging of crystalline and amorphous parts in a fibre; modern view of fibre structure; four different crystalline forms of cellulose; relationship between fibre structure and fibre properties; amorphous cellulose and moisture regain; high fibre density implies maximum crystallinity; crystalline cellulose has low extensability; acid hydrolysis of cellulose; comparative data on cellulose structure; and future research.

Need more fiber facts

Anon. *Am. Wool Cotton Reptr. 65,* 9-10, 47 (Apr. 5, 1951).

Although a wide range of information in regard to cotton fibers is available, particular information as to what characteristics are important for improving the cotton fiber is lacking. With the development of synthetic fibers, a base for comparison has been made available since it is much easier to compare characteristics of different products when competitive materials are available. Comparisons should be made as to the effect of such factors as convolutions, fiber diameter, thin-walled fibers, etc. on the end results of cotton fibers; and the results should form the basis for planning improvement in the cotton fiber.

Nomograph — Calculation of the degree of elongation of fiber during its preparation

Joseph T. Hogan. *Am. Dyestuff Reptr. 39,* 725 (Oct. 30, 1950).

A nomograph for calculating the degree of elongation of peanut protein fiber during its preparation is presented, and the theory and method of construction and use of the nomograph is explained.

Observations on the properties of wool with particular reference to scouring

A. C. Goodings. *Am. Dyestuff Reptr. 40,* P55-60 (Jan. 22, 1951).

Efforts to elucidate the molecular structure of wool can be greatly assisted by a comparison of its properties with constitutionally simpler fibers, such as silk and nylon. Density consideration, for example, can be made to show that the wool molecule does not have a straight-chain configuration similar to that in silk.

The lubrication of cotton and other textiles

E. Moss. *J. of Applied Physics,* Supplement to No. *1,* 19-23 (Jan. 1951).

The frictional properties of cotton are controlled by the layer of natural wax on the fibers. Those finishing processes which remove wax tend to increase friction between cotton and other surfaces. The introduction of other surface layers, as in dyeing, may also increase friction. The high friction of wax-free cotton is reduced by the addition of lubricants, whose effect within some classes of compound varies regularly with chemical constitution. The lubrication of regenerated celluloses is broadly similar. Low and uniform friction between textile and machine is very important in processes such as knitting and stitching.

Treatment of cellulosic fibers

Hendrik Romeyn, Jr. (to U. S. Rubber Co.) USP 2 549 014, Apr. 17, 1951.

A method of improving the tensile strength of stranded grey cotton fibers which comprises subjecting them to successive contact with two liquids, one being a dilute aqueous ammonia solution, and the other being an organic liquid having the property of dissolving cotton waxes comprising an alkyl acetate the alkyl group having from 3 to 5 carbon atoms, the solvent treatment being carried out at a temperature substantially above 25° C., but not in excess of 150° C., the entire liquid treatment allowing maintenance in the fibers of substantial proportion of the original cotton waxes, and drying the fibers, and maintaining the stranded fibers under a marked tension materially less than the breaking strength of the untreated stranded fibers during at least part of the liquid treatment.

Wool structure

Helmut Haselmann & Helmut Zahn. *Melliand Textilber 32,* 1-6 (Jan. 1951); *in German.*

The authors proceed from the extensive analogy shown by the electron microscope to exist between the longitudinal structures of chemically and enzymatically isolated parts of the scaly cover of wool, and the parallel ridge reliefs recently proved by the aid of the phase-contrast miscroscope to exist on the surface of epithelial cells, and make it seem likely that both structures are based on a fibrillary system. The course of the tonofibrils in the interior of epithelial cells, as well as in the bridges between the cells is discussed. Owing to the orientation of the cells, the tonofibrils and their conversion products in the scale cell are disposed parallel to the fiber surface, as well as in the direction of the fiber in a flat layer lying parallel to the axis. The authors were able to show that the presence of longitudinal structures in scale cells could also be demonstrated under the phase-contrast microscope, whereby a preparation was examined which consisted of parts of the scale sheathing and intermediate membranes of wool treated with formamide. The greater part of the soft, digestible layer k_1 of the scale cells had here been dissolved by a treatment with formamide and pancreatin, leaving only the resistant component k_2, which shows characteristic ridges and depressions disposed in parallel. The individuality of the single scale cells was clearly brought out under the phase-contrast microscope. Intercellular bridges and continuous fibrils are adapted to explain the cohesion of the individual cells

in the scale layer.

Artificial fibers A 2

Fiber V now "Amilar"

Anon. *Am. Wool Cotton Reptr. 65,* 44 Mar. 29, 1951).

The trade-mark "Amilar" has been adopted by the duPont Company for Fiber V, its synthetic polyester fiber which is a condensation polymer obtained from ethylene glycol and terephtalic acid. "Amilar" fibers have high tensile strength; high resistance to stretching; good electrical insulation properties; good resistance to abrasion, fungus, mold, or mildew, etc. Fabrics of "Amilar" have excellent resilience, resistance to wrinkling, launder easily, dry quickly and can be heat set. Window curtains, blouses, shirts, sewing thread and suitings of "Amilar" are currently being tested.

Method of making crinkled fibers

Le Roy V. Jones (to The Dow Chemical Co.) USP 2 543 027, Feb. 27, 1951.

The method which comprises heating an extrudable normally crystalline saran in extrusion apparatus to a temperature from 5 to 20 centigrade degrees above its melting point, then, while advancing the saran toward an extrusion orifice, cooling the saran from 15 to 25 degrees to a temperature 5 to 20 degrees below its melting point, extruding the saran in the form of filaments at the lower temperature, and supercooling and stretching the filaments, to obtain a filamentary product having a natural crinkle.

Staple rayon mixtures: fiber strength distribution

Kurt Ramsthaler. *Textil-Praxis 4,* 358-60, 438-40 (1949); *in German.*

Large-scale sampling and statistical methods are applied to determine the distribution of fiber strength over a number of deliveries of staple rayon mixtures. A discrepancy of strength in the last of 4 deliveries could not be explained by physico-chemical investigation. As a first step mean values of tear strengths and their mean deviations were found. The frequency of fiber strengths and elongation was then plotted in groups, and the author points out that a very large number (2,000) of measurements had to be made. Gauss's normal distribution curve is super-imposed on the total collective graph and is found not to fit. The lack of unison of the partial collectives and their inconsistence with experience is interpreted by the author as indicating that the lower fiber strength of the 4th delivery was due to external causes quite unconnected with the material. Large-scale sampling is then applied to the analysis of frequency curves. Sum frequencies are found and the results of this investigation are summarized and a practical interpretation is given.

Method of making crinkled fibers

Nelson W. Abernethy (to The Dow Chemical Co.) USP 2 542 973, Feb. 17, 1951.

The method which comprises extruding fine filaments of a normally crystalline saran downwardly through air and directing against all sides of each such filament a plurality of streams of a gas inert to the filaments at a level between 1 and 10 inches outside the extrusion orifice and in a manner such as not to force the hot filaments into cohesion with one another, and supercooling and stretching the filaments, to obtain a filamentary product having a natural crinkle.

Synthetic fibers — the search for new polymers

J. A. Somers. *British Rayon & Silk Journal 27,* 54-55 (March 1951).

B. P. 634,172 describes the preparation of polyamides which are related to those used for the manufacture of nylon but quite different in important particulars. The new polyamides have useful fiber-making properties in spite of the fact that they are not strictly lenear. They are made from amino-carboxylic acids and polybasic acids. Their relationship to those in common use are outlined.

The connection between fine structure and creasing properties of viscose rayon

Elod & Kramer. *Textil-Praxis 6,* 52 (Jan. 1951).

The increasing creasability of fibers in the order wool, silk, acetate, rayon, viscose rayon, cuprammonium rayon, cotton, bast fibers, is a result of the increase in crystallinity in that order. The length of the crystallites influences the creasing properties in so far as the long crystallites of the natural cellulosic fibers parallize easier than the short one of the rayons. It became clear from the experiments carried out by the authors that stretch during spinning increases the creasing angle. The effect of humidity on crease resistance is discussed. The creasing properties of viscose rayon are greatly influenced by conditions during the spinning process.

Vinylon from Japan — a new synthetic fiber

Anon. *Textile World 101,* 123, 232 (April

1951).

Vinylon is a new polyvinyl alcohol fiber from Japan that has high strength, low specific gravity, high abrasion resistance, high moisture regain, strong resistance to acids and alkalis, and strong resistance to fungus and mildew. Its properties are compared with natural fibers, regenerated cellulose fibers, polyamid and polyvinyl synthetic fibers.

YARN PRODUCTION B

Fiber preparation B 1

Cotton cleaner

Arthur C. Moody. USP 2 549 223, Apr. 17, 1951.

In a cotton cleaning device, a rotatable agitator including, an elongated shaft adapted to be rotatably mounted in a cleaner, a plurality of blade supporting members mounted on the shaft, a plurality of elongated agitator blades carried by the supporting members spaced from the shaft and extending parallel thereto, the blades being rectangular in outline and having their width extending radially with respect to the shaft, the inner corner at each end of each blade being cut away to form a beveled portion on the blade whereby the fan action of the blade is enhanced, and spaced agitator fingers carried by each agitator blade.

Dry scouring of wool

P. Townsend. Brit. P. 641,678. *Dyer 104*, (Dec. 1, 1950).

See front section.

Efficient blending of raw stock at Shelby Cotton Mills

Staff. *Textile Industries 115*, 113-115 (April 1951).

See front section.

Modern Machinery — its relation to fiber blending

H. P. Balsom. *Textile Age 15*, 32-33 (February 1951).

See front section.

New cotton opener machine

Anon. *Am. Wool Cotton Reptr. 65*, 43 (Apr. 5, 1951).

A new cotton opener machine, developed by the Southern Research Laboratory, opens lumped cotton from compressed bales so that trash and foreign matter can be dropped out without damaging the fibers. A series of toothed cylinders pick out small bits of fiber at a time, dividing tufts into a loosened fluffy state. The machine is about 4 by 6 feet in size and can handle about 2,000 pounds of cotton per hour.

New trash ejector for openers

Anon. *Daily News Record*, April 5, 1951.

See front section.

Picker lap-weight charts expose operating faults

E. H. Helliwell. *Textile World 101*, 112, 332 (April 1951).

Yard-by-yard variations in picker laps are shown by the Saco-Lowell lap meter. Study of the graphs of yard-by-yard weights will reveal causes of irregularities in the picker. Old methods of obtaining the yard-by-yard weights are described, and practical mill tolerances for picker lap weights are discussed.

Short-wool top making requires special care

Victor Saxl. *Textile World 101*, 104-105, (April 1951).

Step-by-step pointers on scouring, carding, gilling, and combing short wools are outlined for the purpose of helping produce good tops. Shortage of wool is forcing the mills to use shorter wools in greater quantity. Wool in tops now average about 1 to 1½ inches. Formerly, staple lengths of 2½ to 3 inches were used for combing.

Tandem-unit waste machine offered

Anon. *Textile World 101*, 129 (April 1951).

A new tandem-cylinder waste machine processes hard unsized waste of cotton, rayon or wool. Each cylinder has two sets of feed rolls, one at the front, one at the bottom. The machine combines two, three or more units into a single housing, with only one feed apron and one delivery apron. Mfr: Kirkman & Dixon Machine Shop & Foundry, Greenwood, S. C.

Textile fiber working machine

Ernest H. Rogers (to Saco-Lowell Shops) USP 2 544 965, Mar. 13, 1951.

In a fiber filtering machine of the type having a casing controlling an air-stream and within the casing a rotatable screen through which a stream of air laden with fiber is conducted when the machine is in operation so that a fibrous mat builds up on the screen, a delivery mechanism for removing the mat from the screen and discharging it from the casing comprising a pair of rolls running in peripheral contact with each other and between which the mat is drawn from the screen,

one at least of the rolls comprising a rigid shaft and a covering consisting of a series of annular rings of soft rubber positioned end to end on the shaft independently of each other, the rings being capable of conforming to and accommodating local irregularities independent of each other to prevent substantial flow of air between the delivery rolls.

Carding and combing B 2

Colored worsted yarns

Anon. *Wool Record 78*, 441-442 (August 10, 1950).

The importance of evenly blended shades requires special methods of dealing with dyed slubbing or top, depending upon the blend and the yarn quality requirements. Crossbreds below 58s need not be recombed and may be re-gilled and blended in gill boxes prior to drawing. Recombing is usually done in the qualities from 58s and upwards, and the blend may be handled in two ways: 1) gilled and recombed as individual shades, and blending done either in a mixing set or in the drawing; 2) gilled, blended and recombed. More even shade is obtained in the mixture if blending is done in blending sets prior to drawing. But, if blending is to be done at the drawing, best results are obtained by giving the material three gillings: two can gills and the spindle gill.

The whitehead sliver condenser

Anon. *Textile Weekly 47*, 286 (Feb. 2, 1951).

A sliver condenser (or compressor) for the front calender rollers of carding and draw frames which works on the tongue and groove channel and boss principle, produces a smaller diameter sliver than the other methods.

The method is easily applicable for the front calender on the draw plate of the card as well as the front calender rollers of the draw frame for all existing makes of machinery. It is economically priced, and after exhaustive tests in various Lancashire cotton and rayon staple spinning mills the makers claim that it will on the average give a 25% increase of the sliver in the can both at the card and draw frame, and in exceptional cases the increase has been over 50%. The compressor allows the calenders to operate smoothly and efficiently, and requires little or no maintenance.

The advantages are as follows: (1) Better, smoother, and easier drawn sliver. (2) 25% increase in can contents, making 9 in. can equal

to 12 in. can, and three cans used in place of four on normal drawing methods. (3) Increase production from fewer stoppages and more even yarn from 35% less piecings. End-breaks in spinning far less, from complete folding in of sliver selvedge. (4) Sliver feeds evenly from cans without the use of can springs, regardless of hank sliver. (5) Easier work for operative from the use of smaller diameter and more compact sliver.

Drafting and roving B 3

Device for placing slivers into cans

Werner Naegeli (to Actiengesellschaft Joh. Jacob Rieter & Cie), USP 2 546 557, Mar. 27, 1951.

In a machine for preparing slivers for spinning, a main frame, a plurality of coiler heads having openings for delivering slivers, cans for receiving slivers delivered from each respective coiler head, clamping means for exchangeably suspending the cans below the coil heads, a can supporting frame carried by the main frame to which all of the clamping means are attached, and means to impart to the can supporting frame a circular movement in a horizontal plane.

Proper tension on fly frames decreases variation in roving

Staff. *Textile Industries 115*, 116-118 (April 1951).

See front section.

Whitin roving flyers

Anon. *The Whitin Review 18*, 32-35 (January-February 1951).

Today, high quality pressed steel is used in the manufacture of flyers, providing higher finishes that prevent clogging and loading of the flyer. Improvements in machine tools permit closer tolerances on the let-on where the flyers fits the spindle.

Spinning B 4

Ambler super-draft system

Anon. *Textile Mercury and Argus 124*, 3226 (Feb. 2, 1951).

A resume of the difficulties encountered and the progress made during the past year in the development of the Ambler Super-Draft Spinning process tells that the imposition of fiber control by means of the Super Draft was still the basis of the system. The theory, developed to explain its action, had been confirmed by further experience.

The unit itself had been only slightly changed, the small tension rollers being now made smooth; this should theoretically be an advantage, and had proved so in practice. Due to changes in roller design, the sensitivity of spinning performance to setting had been very greatly diminished, so that at commercial drafts a change even up to 0.25 in. in setting position was now possible without materially affecting the yarn.

Bobbin with die cast center core

William H. Miller (to Cloverleaf - Freeland Corp.) USP 2 542 554, Feb. 20. 1951).

In a bobbin, spool or the like, a barrel having a head at each end thereof, a core disposed in the barrel and provided with a longitudinally tapered bore for the reception of a tapered spindle, the core at one end being provided with an integral base adapted to secure one head to one of the barrel ends, an adaptor provided with a plate portion adapted to secure the other head to the the other barrel end, the adaptor being provided with an extending tubular part disposed within the barrel and provided throughout its length with a bore, the inner end portion of the bore of the tubular part being threaded and the outer end portion of the bore being unthreaded, the unheaded end of the core having an outer end portion adapted to snugly fit the plain unthreaded outer end portion of the bore of the tubular part and having a threaded portion adapted to engage the threaded portion of the bore, the parts operating whereby the core and the adaptor can be rotated in respect to one another to clamp the heads to the barrel ends.

Machines in twine manufacturing

P. Beckers. *Melliand Textilber. 32,* 10-18 (Jan. 1951); *in German.*

This article presents a comprehensive survey of the raw materials used for the manufacture of string, binder (harvesting) twine and rope yarns, and describes their preparation, as well as that of the soft and hard types of hemp and the hemp tows. Considerable space is devoted to the gulling and spinning machines, as well as to the laws governing the insertion of twist while spinning. The spinning of hard fibers, more especially sisal, is dealt with fully and finally details are given of the technology of strings and ropes. The article concludes by summarizing the chief data about strings and ropes.

Roller drafting system

H. Stein. *Textil-Praxis 4,* 307-09 (July 1949); *in German.*

The differences between theoretical and actual draft in the preliminary drafting head were investigated. Excessive differences were said to be due to slipping in the first rollers. Distribution of pressure over the rollers is of importance for correct draft, maintenance of count, and check on yarn breaks. The distance between rollers is also of importance. A number of tests were carried out to determine the forces and the nature of drafting in the preliminary and main heads. Results are presented as a draft-force diagram. The effect of draft on twist was also investigated and it was found that the yarn is not untwisted. Further mill tests are recommended.

Processing staple rayon on cotton machinery

Berthold Kirschner. *Textil-Praxis 4,* 355-57 (Aug. 1949); *in German.*

The processing of rayon staple on cotton machinery is described under the following headings: mixing, cleaning, lap uniformity, carding, drafting flyer-frames, and ring spinning. Temperature and humidity control are considered. A procedure and data for setting the machines are presented. Points of particular interest in rayon staple spinning on cotton machinery are noted. The alternate spinning of cotton and rayon staple on the same machines is not recommended. Practical suggestions are given for the maintenance of machinery.

Slubs in worsted yarn

Anon. *The Wool Record & Textile World 79,* 873-874 (March 15, 1951).

See front section.

Spinning frame maintenance

Joseph A. Quill. *The Whitin Review 18,* 20-21 January-February, 1951).

See front section.

Spinning nylon yarn on the woolen system

Anon. *Textile Age 15,* 45 (February 1951).

See front section.

Spinning and preparatory machine

Joseph Noguera (to Casablancas High Draft Co. Ltd) USP 2 543 374, Feb. 7, 1951.

In a spinning and preparing machine, means for detachably mounting, between roller slides, cap bar rods carrying cap bars, the means comprising rearward extensions on the slides each the extension being adapted on one side to receive and support a rod end so that the rod end is free to rotate and move axially relatively to the extension and on the other side being provided with an open ended

groove, an end cap bare each adapted on one side to receive and hold another rod end whilst being formed on the other side with an open ended slot, the design of the end cap bars and slide extensions being such that an end cap bar and slide extension can be mutually engaged by entering the rod end supported in the extension into the slot in the cap bar at the same time entering the rod end held by the cap bar into the groove in the extension, whilst the slot and groove lie parallel to one another, until the rods are aligned, whereupon the cap bar and slide can be relatively angularly displaced about the aligned axes of the rods so that the cap bar is held locked upon the slide extension.

Spinning mule production and mean yarn count

W. Oeser. *Textil-Praxis 4*, 309 (July 1949); *in German.*

A formula is derived for mule production from Johannsen's delivery formula (1902). Simplified and adapted for the mule, the formula is useful in the mill for the comparison of production, particularly of worsted yarn. The time of the carriage movement includes factors representing the change of spindle speeds. The final formula is followed by one used in practice which has the product of delivery times and metric yarn count as a constant.

The Textile Quarterly, Volume I

Published by H. M. Carter Publications, Limited, 2 Marcus Ward Street, Belfast, Northern Ireland. 88 pages.

A quarterly containing technical articles as follows: "The Theory and Practice of Flax Spinning" by A. V. Pringle; "Cordage Testing Methods" by David Himmelfarb; "Jute and Linen Weaving" by Thomas Woodhouse and Thomas Milne; "Textile Organization and Production" by A. E. Clifford.

Woolen and worsted yarn manufacture I

Anon. *Wool Record 78*, 269, 271, 272 (July 27, 1950).

Yarns for weaving purposes are normally delivered in oil, on cheese or on pirns, while for hosiery they may be delivered in oil on cones or clean on cones. For hand-knitting purposes, skeins of ½ oz., 1 oz., and 2 oz. are formed. The details of management in the reeling department of a British mill are described, with emphasis upon how they handle help.

Woolen and worsted yarn manufacture II

Anon. *Wool Record 78*, 359, 361, 363 (August 3, 1950).

Examples of machines and organization are given for winding yarns ranging from 2/60s to 5s worsted, and from 2/40 skeins to 4 skeins woolen, in qualities varying from the finest Port Philip merino to the lowest Blackface. The essentials of good winding, mechanical features of the winding machines, slub catching or as the British say "slub-clearing", and defects of tension during the winding are stressed.

Woolen and worsted yarn manufacture III

Anon. *Wool Record 78*, 433, 435, 437 (August 10, 1950).

The winding department is the focal point in British mills for quality. It is the final checking point for imperfections, and they require an experienced overlooker (overseer). The article describes the type of winders used and how skeins, two-fold woolen yarns, and compound twist yarns are handled on these machines. Production tables show the spindles per operator, average pounds per hour, and type of cheese produced.

Yarn conditioning device

Charles F. Dulken, Arthur M. Stern, George Westwater, and Paul A. Reuter (to Charles F. Dulken) USP 2 543 098, Feb. 27, 1951.

A device for conditioning or dyeing yarn or the like by means of a liquid while the yarn is on a package into which it has been wound by a winding machine having a positively driven roller of substantially the same length as the package and driving the package by frictional engagement therewith, the device comprising wetting means including a tray member having an open portion adjacent to the drive roller, conditioning liquid supply means connected with the supplying liquid to the tray member, and roller means resting and rolling on the tray member as well as on the adjacent roller.

Winding and spooling B 5

Attachment for spools of thread

John H. Erickson. USP 2 542 758, Feb. 20, 1951.

An attachment for a spool of thread, made of resilient sheet material capable of being flexed out of its normal plane and embodying therein a body portion longer than and adapted for arrangement longitudinally of one side of a spool having thread wound thereon and an axial bore, members projecting laterally from each end of

the same longitudinal edge of the body portion and adapted for endwise retaining entry into the ends of the bore, and a presser tongue between the members and extending laterally from the same longitudinal edge of the body portion and capable of being flexed out of the plane of the body portion to engage upon the thread wound on the spool for holding the loose end thereof from unwinding, there being an opening in the attachment toward that side opposite the first mentioned edge for the passage of a needle therethrough with its pointed end portion disposed and frictionally held between the tongue and the thread upon the spool.

Bobbin winding machine

Burt A. Peterson (to Barber-Coleman Co.) USP 2 543 931, March 6, 1951.

In a bobbin winding machine having a series of uniformly spaced winding units, a bobbin handling mechanism for delivering doffed bobbins from the winding units onto carriers providing a plurality of bobbin supporting elements arranged in a plurality of rows and spaced apart in each row a distance less than the spacing of the winding units, the mechanism comprising a receiving conveyor having a first series of bobbin holders spaced apart according to the spacing of the winding units, a condensing conveyor having a second series of bobbin holders spaced apart according to the spacing of the bobbin supporting elements on the carriers, means for causing the transfer of the wound bobbins successively from the holders of the first series to the holders of the second series, and means for delivering bobbins from the second series of holders onto the supporting elements of the carrier.

Ferrule reforming apparatus

Jesse B. Goodgame and Connie Dexter Baker, Sr. (to Precision Gear and Machine Co.) USP 2 542 508, Feb. 20, 1951.

Apparatus for reforming deformed ferrules on the ends of a tubular bobbin comprising a fixed pilot member for receiving one end of the tube, a resiliently mounted tubular member having an outwardly flared circular cavity in the end thereof disposed next to the pilot member and urged toward the fixed pilot member for receiving the other end of the tube, a reciprocable plunger having a tapered end and mounted for sliding movement in the resiliently mounted tubular member, means for moving the plunger away from the adjacent end of the bobbin and means for moving the plunger toward the bobbin to cause its tapered end to fit in the bobbin to reform the ferrule on the end thereof into substantially circular shape.

New Mack twister announced

Anon. *Am. Wool Cotton Reptr. 65,* 23 (Mar. 29, 1951).

A new all-bakelite twister bobbin designed for high speed operation is reported. The bobbin can be subjected to frequent steaming without distortion or change in bore, thus completely eliminating the need for reboring as in maple barreled bobbins. This new bobbin is manufactured with bakelite barrels of several wall thicknesses and a wide range of diameters, and bushings are press fit and cemented into the barrels. Mfr: Allentown Bobbin Works.

Self-cleaning tension device for winding "dirty" yarns

Staff. *Textile Industries 115,* 105 (Apr. 1951).

This self-cleaning dead-weight tension device contains a freely rotating wheel with 3 slots cut which drop the seeds and fly removed from the yarn by the tensioning device. The outer rim of the wheel and the central boss of the "hub" are slightly raised; and conventional dead-weight discs, mounted on 2 suspended vertical posts to bring them into contact with the wheel, are used to exert the necessary tension on the yarn. The discs rest on the raised outer rim and central boss, and the yarn passes between these raised surfaces and the tension discs, providing controlled tension and a cleaning action. Mfr: Muschamp Taylor Ltd.

Thread advancing reel

Harry A. Kuljian. USP 2 543 031, Feb. 27, 1951.

Apparatus of the class described comprising a plurality of rolls disposed about a major axis with their axes at equal angles thereto and equi-distant therefrom in all planes normal to the axis, driving means for rotating all the rolls at the same speed on their axes, and means operable to shift one end of all the rolls about the major axis relatively to their other ends irrespective of whether the rolls are in motion.

Winder attachment transports and stores bobbins

Anon. *Textile World 101,* 132 (April 1951).

See front section.

Winding for quality output

E. W. Schmiedel. *The Knitter 15,* 39-40 (February 1951).

The ideal knitting package for the circular knitter would have the fewest possible number of winds, with each coil the same length, and furnishing the yarn at the same angle to the knitting machine. In circular knitting, the yarn is pulled or dragged off the single-end supply package. The best arrangement would be one similar to the rubber laying-in attachments, in which the exact length of yarn required for each course or feed is predetermined and furnished without tension so that the knitter can positively count on perfectly even stitches.

There is a difference of opinion on the use of feed wheels which are used on some machines to furnish yarn at a constant rate and to pull it off at even tension. But regardless of various aids for yarn feeding, a knitting cone should contain the following qualities:

1) A soft cone with uniform density throughout; 2) free from stitches, cuts or ribbons; 3) good shape, accelerated taper, wide base, and shallow cup at the nose; 4) free from slubs, tails, large knots, chafed or uneven yarn, and undisturbed lay; 5) the twist should not run back and snarl, and the yarn should not be too lively.

Winding machine

Joseph A. Truitt (to American Viscose Corp.) USP 2 545 534 (Mar. 20, 1951).

A winding machine comprising a rotatable spindle for receiving a carrier upon which a strand is to be wound, a rotatable member carrying a magnetizable element, a second independently rotatable coaxial member carrying a magnetic element opposite the first member, the rotatable members being relatively movable in an axial direction, one of the members being connected to the spindle for rotating it upon rotation of the member, stopping means for the machine, and means responsive to actuation of the stopping means for separating the rotatable members into positions of minimum magnetic interaction.

Yarn package testing apparatus

Noel J. Folson (to Camille Dreyfus) Can. P. 470 268, Dec. 19, 1950.

In a yarn package testing device for determining the firmness and density of yarn windings on a yarn package support, the combination with testing means, including a force-driven pointed testing rod for penetrating the windings and a measuring device having a scale indicating the degree of penetration of the testing rod into the yarn windings on the yarn package, of adjustable support means for maintaining the testing

means in a predetermined position, the support means comprising guide rods on which the testing means is slidably mounted for lateral movement, means for supporting the guide rods at a plurality of points, means co-operating with the guide rods for varying the angle and elevation thereof comprising a vertically adjustable hinged bracket in which the guide rods are mounted at one end and a vertically adjustable rigid bracket carrying the other end of the rods, and a separate support for mounting a yarn package to be tested in a fixed position relative to and beneath the position of the testing means, the support comprising a horizontal rod, a shaped holder expandable at one end carried thereby and adapted to receive a yarn package, lever means for expanding the shaped yarn package holder and locking the yarn package in fixed position thereon and means including one of the supports for the guide rods for supporting the horizontal rod.

Yarn Friction

Ettore Viviani & L. Graziano. *Rayonne Et Fibres Synthetiques 15,* 17-23 (Jan. 1951); *in French.*

A study has been made of the friction of rayon yarns between themselves and of various materials. In this first report, the authors have limited themselves to general considerations by describing the methods used for making the study and by presenting graphs illustrating the various points which will be developed in more detail.

FABRIC PRODUCTION C

Yarn preparation C 1

Creel tensioning device

Boyd F. Shaffer and Julius Frank Sprute (to American Viscose Corp.) USP 2 542 097, Feb. 20, 1951.

A yarn tensioning and breakage detection device for a creel adapted to be placed between the package supporting section of a creel and a yarn withdrawing means comprising a series of three laterally spaced horizontal rods, connecting means extending between the middle rod and one of the other rods pivotable with respect to the other rod, means for adjusting the middle rod along the arc through which it swings when the connecting means is pivoted, and means for thread breakage detection.

Increased efficiency of yarn sizing machines

A. Borchardt. *Kunstseide und Zellwolle 27,*

123-26 (1950).

The purpose of sizing, the established methods and machines used for sizing and rying are reviewed. The latest models of machines are described in detail. The principal feature of the Dirks air dryer is the economy obtained by mixing warm air from other processes with an amount of fresh air and drawing this mixture into the supply of the dryer. Only one passage is necessary with a well-adjusted Dirks dryer. Schwalbe's sizing and drying machine also exceeds the efficiency and output of older machines. In this machine an exhaust produces the air current which is heated in passing through a chamber.

Slasher drive improves beam uniformity

E. H. Helliwell. *Textile World 101,* 110-111 (April 1951).

A new beam drive with Servo control in conjunction with a Reeves variable-speed transmission maintains an accurate and uniform control of tension in winding yarn on beams at a prominent New England mill. The system eliminates the old friction clutch. The output shaft of the variable speed transmission drives directly to the beam shaft through a new type of controlled-slip drive.

The speed of the beam shaft is reduced by the Servo control which compensates for the increase in beam size and maintains the surface-winding speed constant. Uniform density and even tension are claimed for the beam packages. Counts being run: 24s to 60s. Ends on 69-inch beams vary from 4,000-6,600, and speeds range from 40-60 yards per minute.

The sickness and recovery of a textile mill—Part 6

James Osborne. *Textile Age 15,* 62-63 (March 1951).

See front section.

Warp beam stopping mechanism

Ernest K. Bauer (to American Viscose Corp.) USP 2 546 141, Mar. 27, 1951.

In a beaming apparatus comprising a flanged beam, means for rotating the beam, a rotatable compressor roll, means for mounting the roll swingable about an axis outside its periphery, and means for urging the roll toward the center of the beam into position of rest against the outer of any windings thereon, the combination with a braking system comprising a brake drum secured for rotation with the beam, a brake lever, a brake shoe carried by the lever, a rotatable

brake shaft, means for rotating the shaft to apply the brake, a linkage between the shaft and the lever to apply the brake upon rotation of the shaft, and means for varying the position of connection between the linkage and the lever in dependence on the diameter of winding on the beam.

Warp dye beam

Homer V. Lang. USP 2 548 899, Apr. 17, 1951.

A warp dye beam member comprising a perforated cylinder and a pair of head members, the head members having annular ribs, projecting from the proximate surfaces thereof, the ribs having perforations therethrough and having a circumferential groove on their exterior surface over which the ends of the perforated cylinder fit, whereby a treating fluid may pass in either direction through the ribs and between the ribs and the perforated cylinder and through the perforations in the cylinder, and means penetrating the head members and disposed on the interior of the cylinder for securing the heads against the ends of the cylinder.

Weaving C 2

Anticreep warp-lifting roller in circular weaving looms

Jean Rabeaux & Raymond Jacob (to Societe Saint Freres) USP 2 544 466, Mar. 13, 1951.

In a circular weaving loom having a well and comprising at least one shuttle by means of which a weft thread is laid between the ways thread sheets close to the top of the well, a warp-lifting roller positioned at the rear of each shuttle and revolved about the loom well at a speed equal to that of the shuttle the rim of the roller being formed from a thread-retaining material and being adapted to slightly lift the warp threads as it moves past the same, the roller being rotated at a peripheral speed greater than the speed of revolution of the roller about the well whereby each warp thread will be replaced on the well edge without vibration at a point just a little behind the one it occupied when lifted therefrom by the roller.

Automatic filling guide for textile looms

Chester N. Perry. USP 2 544 803, Mar. 13, 1951.

In a loom, the combination of a vertically movable shuttle box and a race plate for receiving shuttles from the box, and a filling guide for

the filling of the shuttles and comprising a stationary vertical guide plate supported by the loom adjacent the entrance to the race plate, means adjacent the guide plate holding the filling taut, and means actuated by the vertical movement of the shuttle box for similarly moving the first-named means and the filling held thereby.

Balanced weft tension for loom shuttles

Richard G. Turner (to Crompton & Knowles Loom Works) USP 2 545 934, Mar. 20, 1951.

In weft tension mechanism for a loom shuttle having a threader block, a pair of vertically extending tension pads mounted on the block, a laterally extending finger on each pad effective due to momentum thereof tending when the shuttle is checked near the end of its flight to tend to cause the angular movement of the pad, and a counterweight on each pad on the side thereof opposite the corresponding finger and movable relatively to the shuttle and counteracting the tendency of the corresponding finger to cause the angular movement.

Bow shuttle

Delbert B. Lease (to Celanese Corp. of America) USP 2 543 914, March 6, 1951.

A shuttle comprising in combination with a shuttle body having an aperture extending therethrough, a supporting rod positioned in the aperture, a bobbin support for carrying a filling bobbin pivotally engaged with the supporting rod, adjustable stop means carried by the supporting rod and cooperating with the bobbin support for holding the bobbin support parallel to an axis extending along the length of the shuttle body, guide means positioned centrally of the ends of the shuttle body for guiding the yarn as it leaves the shuttle, and means for guiding the yarn over the end of the filling bobbin on its way to the centrally positioned guide means.

Common faults in woven fabrics

Anon. *Textile Recorder 68,* 94-95 (March 1951).

Bars or thick and thin places sometimes extend across the width of a fabric. This type of defect may occur during the starting or stopping of the loom by the weaver, or during some mechanical fault while the loom is running. Start-up marks are caused by the insertion of too many or too few picks at the place in the cloth where the loom is restarted. Detailed instructions for the weaver are cited as a means of taking proper precaution in setting the fell of the cloth during such a startup.

Comparison of ordinary and circular looms

Eduard Wuttig. *Textil-Praxis 4,* 324-25 (July 1949).

The kinetic inefficiency of ordinary looms is demonstrated by showing how much energy has to be produced and destroyed again 7,000 times per hour to move a length of weft yarn weighing only a fraction of a gram. The disadvantage and advantages of the mechanical loom, a circular loom, and the Sulzer-Rossmann loom are given in a table. A circular loom constructed by the author is described briefly. This loom runs silently and requires very little driving power. A number of possible modifications are mentioned.

Design of rayon crepes, taffetas and linings

Julius Wendlik. *Textil-Praxis 4,* 382-84 (Aug. 1949); *in German.*

Loom settings, warping instructions and rates of production are presented for a number of crepe, taffeta and lining weaves from rayon. Illustrations of the fabrics are given.

Design of double cloths

J. Miss. *Textil-Praxis 4,* 314-15 (July 1949); *in German.*

In this discussion of the designing of double cloths details of the following methods of interlacing are given with diagrams: 1) The lower warp is bound with the upper weft in several places; 2) the upper warp is bound with the lower weft in several places; 3) special warps or wefts are woven to bind the 2 cloths. It is recommended that symbols and colors in the design be used for clarity.

Device for preventing false weft detection

Leon A. Carron (to Crompton & Knowles Loom Works) USP 2 543 488, Feb. 7, 1951.

In weft detecting mechanism for a loom having a transferrer arm which operates on weft replenishing beats of the loom, a weft detector moved forwardly by the transferrer arm on replenishing beats of the loom, a side slipping detector finger on the weft detector normally in nonindicating position but tending to have a false side slipping indicating movement when the weft detector is moved forwardly by the transferrer arm, a lock lever for the finger pivoted on the weft detector, a stationary control member normally engaging the lever and preventing the latter from moving to locking position relatively to the finger when the weft detector is in normal position, and resilient means tending to move the

lock lever into locking position relative to the finger, the weft detector when moved by the transferrer arm moving the lever relatively to the control member and the resilient means thereupon moving the lever into locking relation with the finger to prevent the latter from having a false side slipping movement.

Double swell in shuttle

E. Ullrich. *Melliand Textilber. 32,* 21-2 (Jan. 1951); *in German.*

Fluctuations in the speed (or current supply) of high-speed looms with a single shuttle-box swell, or changes in atmospheric humidity, or differences in the shuttles (being too dry or too greasy, or showing signs of wear) may cause unnecessary stoppage of the loom, thereby lowering production and involving repeated readjustment of the picking mechanism. The double swell, on the contrary, ensures the accurate end position of the shuttle and permanent regulation of the picking mechanism. The author enumerates the requirements of good shuttle treatment in the box, illustrates good and bad forms of the swell and a few devices with double swells.

Electric weft detecting system for looms

Victor F. Sepavich (to Crompton & Knowles Loom Works) USP 2 546 617, Mar. 27, 1951.

In an electric weft detecting system for a loom having a source of alternating current electric power, an electric weft detector and mechanism effective to cause a change in loom operation when a solenoid is energized, the system comprising a charging circuit including a condenser, a normally closed switch and a rectifier, a discharge circuit including the condenser, solenoid and a normally open switch connected to the charging circuit between the rectifier and condenser, and electric means effective upon indication of weft exhaustion by the weft detector to open the normally closed switch to prevent flow of electric current from the source through the rectifier to the solenoid and close the normally open switch to energize the solenoid by electric power derived from the condenser only.

Electromagnetic dobby speeds sample design variations

Gustav Zellnik. *Textile World 101,* 89-91 (April 1951).

See front section.

Lappet loom

John S. Kane. USP 2 542 677, Feb. 20, 1951.

For use in a lappet loom having an uncapped

reed and heddle-type lappet needles carried by a forward harness frame, each needle having a guide head below the yarn eye; a pair of upstanding parallel tracks for the guide head, located between adjacent warp threads and comprising a fixed lower portion which registers with a transversely movable upper portion.

Loom

Henry James Craymer. USP 2 544 526, March 6, 1951.

A loom having shed forming means for sets of warp threads, comprising a series of displaceable fork-like members each having spaced tines or blades joined to a shank for receiving warp threads of one set between the tines or blades and arranged so that warp threads of a second set can lie in the spaces between adjacent members, and means for displacing the warp threads of the second set alternately in opposite directions whilst the fork-like members are displaced oppositely to the means to effect a corresponding displacement of the warp threads of the first set to form successive sheds, the length of the tines or blades being such that the warp threads engaged therein remain between them during shedding.

Loom shuttle

John J. Kaufmann, Jr. (to Steel Heddle Mfg. Co.) USP 2 545 427, Mar. 13, 1951.

In a loom shuttle of the character described, a tip member having a shank positioned in a hole in the end of the shuttle body, the shank having an enlarged portion of polygonal cross-section immediately to the rear of the base of the tip member, and the rest of the shank being substantially cylindrical.

Method of preparing yarn spools and tube frames for Axminster looms

Oscar V. Payne (to Crompton & Knowles Loom Works) USP 2 544 435, March 6, 1951.

The method of preparing yarn spools and tube frames for the transporting chains of an Axminster loom to weave a fabric symmetrical about a central transverse axis thereof and one half of which considered with respect to the central longitudinal axis of the fabric is of a hand opposite that of the other half, the method including the following steps: winding pairs of identical spools in an order corresponding to the order of the rows of tufts in the first half of the fabric, mounting the spools in the order in which they are wound on pairs of tube frames which are reversible in the chains, applying one tube

frame from each pair of the tube frames to the chains in the order in which the pairs of spools are wound, and reversing the remaining tube frames of the pairs of tube frames and applying them to the chains in the order reverse of the winding order of the pairs of spools.

Napping quality depends on cloth and machine

E. Dalton White. *Textile World 101,* 121, 278 (April 1951).

There are four main factors of good napping quality, according to experience described at Pacific Mills. These are: the construction of the cloth, the type of preparation of the cloth, the condition of the napping machine, and proper adjustments of the machine.

New loom sley cap

Anon. *Textile Weekly 47,* 368 (Feb. 9, 1951).

See front section.

Pneumatic thread remover for looms

Richard G. Turner (to Crompton & Knowles Loom Works) USP 2 543 513, Feb. 27, 1951.

In pneumatic thread remover means for a loom, a tube in which subatmospheric pressures exist under one condition of the loom and in which atmospheric pressures exist under another condition of the loom, a ball within the tube, and a holder in the tube confining the ball but permitting the latter to move freely therein, the holder having a perforation in the bottom thereof and being open at the top thereof, the ball under the other condition of the loom resting by gravity on the holder to close the perforation and hold any thread in the perforation under the ball against the holder, the ball under the one condition of the loom being lifted pneumatically from the perforation to provide a path all around the ball along any part of which the thread may pass in response to the subatmospheric pressures.

Rayon cloth calculations—3

A. T. C. Robinson. *Skinner's Silk & Rayon Journal 25,* 386-388 (March, 1951).

Due to error, a large portion of the author's original text for Part II of this series was omitted. This third article therefore merely supplies the missing portion of the text which explains the cover factor of spun rayons.

Staple rayon fabrics: evaluation in maintenance and wear

Robt. Schwab. *Textil-Praxis 4,* 377-79 (949); *in German.*

The following properties of staple rayon

were examined and indices were allocated on the basis of Stoll's system of quality tests: strength and elongation, staple, fiber fineness, surface structure, fiber friction, adhesion and pliability. Commercial values have a bearing on it. Under maintenance values points were allotted for behavior of the fabric in ironing, sewing and fraying. Serviceability and durability tests were made to ascertain the wearing, washing and dimensional stability properties and these, too, were expressed by indices. The indices were recorded for a number of applications of the fabric, such as suitings, working clothes and technical fabrics, and are presented in table form.

Stop motion for jacquard looms

Albert J. Bartson. USP 2 545 065, Mar. 13, 1951.

In a double cylinder jacquard loom including alternately acting odd and even pattern cards, the loom having a hook subject to control by certain cards of the odd card series and a hook subject to control by certain cards of the even card series, and the loom also having a frame and a "drop-wire" operated stop motion associated therewith for stopping the loom upon any one of the "drop-wires" being permitted to fall by gravity, an oscillatable lever oscillatably mounted on the loom frame a substantial distance above the "drop-wires," an actuating arm whose upper end is disposed adjacent in a lower horizontal plane than one end of the oscillatable lever and a carrier arm pivotally connected at one end to the loom frame and disposed in a lower horizontal plane than the oscillatablel ever, the lower end of the actuating arm being universally connected to a medial portion of the carrier arm, a cord connecting the free end of the carrier arm to one of the "drop-wires" in the "drop-wire" actuated stop motion.

Stopping means for looms

John E. Benton & Drew W. Haynie. USP 2 549 047, Apr. 17, 1951.

In parts of a loom comprising a supporting bracket, an arm substantially L-shaped mounted swingable in one end of the bracket, a rubber block attached to one portion of the swingable arm, a shaft supported in the bracket, the swingable arm mounted on the shaft, a coil spring with one end thereof attached to the free end of the arm having the rubber block on its other end, the other end of the spring attached to the body of the bracket, the spring attached to the body of the bracket, the spring set to normally retain the

rubber block at an angle of approximately 85 to 90 degrees to the major axis of the bracket; a loom bracket plate, the plate and one edge of the rubber block adapted to register adjacent each other when in position for use on a loom.

Spool tension for Axminster tube frames

Walter Y. Robb (to Crompton & Knowles Loom Works) USP 2 547 491, Apr. 3, 1951.

In a yarn spool carrying tube frame for an Axminster loom having a transporting chain to support the tube frame and a clutch movable endwise of the tube frame and a clutch movable endwise of the tube frame, a bracket secured to the tube frame, a hook pivoted on the bracket normally engaging the chain to support the tube frame and moved by the clutch through a range of motion toward the spool to disengage the tube frame from the chain, a lever pivoted on the bracket and having a brake arm and a release arm located at one side of the range of motion, and resilient means normally holding the brake arm against the spool and normally holding the release arm in position for engagement with the clutch to enable the latter to rock the lever and move the brake arm away from the spool at one side of the range of motion when disconecting the tube frame from the transporting chain.

The case for flywheel loom motors

R. J. Demartini. *Textile World 101*, 125, 246 (April 1951).

Some of the advantages claimed for the application of a flywheel to a loom motor are: higher speeds are permitted through a stiff drive; power costs are reduced by the elimination of power peaks; speed flexibility is increased because a 1,200 rpm. motor may be used with flywheel; start-up marks are eliminated; voltage-variation problems are minimized.

Tube frame for Axminster looms

Oscar V. Payne (to Crompton & Knowles Loom Works) USP 2 544 434, March 6, 1951.

In an Axminster tube frame, a carrier bar, spool bearings on the ends of the bar, the latter having a cross section on the form of an inverted isoscles trapezoid symmetrical about a plane passing through the bearings and the longitudinal axis of the bar, the sides of the bar being inclined downwardly and toward each other, and a row of yarn tubes on each of the sides, each yarn tube having a yarn receiving mouth and a yarn delivery mouth, the rows being inclined downwardly and toward each other and having the delivery mouths aligned and in the plane.

Weighted cloths

Josef Schmachtel. *Melliand Textilber. 32*, 25-29 (Jan. 1951); *in German.*

The author describes in the following sections six different methods of making extra weighted cloths of cotton and wool, including the corresponding weaves, sections through warp and weft, and conditions together with hints on production for shaft weaving, as follows:

1. Wadded cloths consisting of one warp thread system with face and backing weft system.
2. Wadded cloths consisting of one warp thread system with face, backing, and wadding weft system.
3. Wadded cloths consisting of one face, one backing warp with one weft system.
4. Wadded cloths consisting of one face, one backing and one wadding warp with one weft system.
5. Wadded cloths consisting of one face and one backing warp, one wadding and one ground weft system.
6. Wadded cloths consisting of one ground and one wadding warp with face and backing weft system.

Knitting C 3

Circular knitting machine

Jaroslav Javorek and Antonin Vanatko (to Bata, USP 2 543 172, Feb. 27, 1951.

A circular knitting machine for the manufacture of split-worked hosiery, comprising: a cam frame, a fixed central upper cam member thereon, knitting needles having short butts, knitting needles having butts of medium length, some of the knitting needles being adapted to serve as connecting needles, knitting needles having long butts, a radially movable cam member disposed beneath the central upper cam member and movable into one position to allow the connecting needle with the shortest butt to pass through while causing the other needles to sink and a fixed lower cam member on the cam frame, the active surface of which, in the circumferential path of movement of the needles is circumferentially spaced rearwardly of the radially movable cam member and is adapted to raise again the needles with medium and long butts while permitting the needles with short butts to pass through without altering their vertical height.

Electric stop motion

Charles M. Rogow (to Efficiency Devices)

USP 2 542 708, Feb. 20, 1951.

An electric stop motion for knitting machines, comprising a bracket attachable to the knitting machine, a spring-urged cloth contact arm having a pivot and being pivotally mounted in the bracket and the movements of which are cloth controlled, an electric gravity switch secured to the pivot of the contact arm, the gravity switch having a cylindrical cavity perpendicular to the axis of the pivot, and insulation member fitted at one end of the cavity and an elongated metallic contact member extending centrally of and into the cavity, a metallic ball in the cavity, the gravity switch having a grounded body member, the free end of the contact member being conected to a source of electric current, whereby when the cloth contact arm is permitted by slack in the cloth to swing on the pivot, the ball moves into contact with the contact member and closes the circuit to effect the stoppage of the knitting machine.

Knitted goods: influence of yarn twist on quality

R. Eicholtz. *Textil-Praxis 4,* 327-29 (1949); *in German.*

A number of defects in machine knitting are traced to changes in the twist or to incorrect matching of the twist in multi-ply yarns. There is no rule for twisting which would give consistent results and often experiments are necessary. When unwinding from a stationary cross-wound bobbin a twist is often given to the yarn through lifting it over the head of the bobbin. This twist may add to, or subtract from, the twist of the yarn and cause loose and irregular stitches. Hints are given to avoid defects by greater care in handling the yarn before and during knitting.

Knitting machine

Samuel Mishcon, Harry Agulneck and Leser Mishcon (to Supreme Knitting Machine Co.) USP 2 543 121, Feb. 27, 1951.

In a circular knitting machine for the production of striped fabrics, a revolving cylinder ring carrying a needle cylinder, a plurality of stationary striping boxes circumferentially disposed about the machine, each striping box having a plurality of yarn carrying fingers movable between predetermined operative and inoperative positions and a rotatable drum for selectively operating the fingers, a movable actuator operatively connected to each drum for rotatably actuating it, a cam slidably mounted on the cylinder ring and movable relatively thereto between a retracted and an operative position, the cam when in its operative position being adapted to successively engage the actuators and operatively move them as the cylinder ring revolves, whereby the striping box drums will be successively rotatably actuated.

Knitting machine

Alfred Woodward Kent (to The Bentley Engineering Co.) USP 2 542 816, Feb. 20, 1951.

In a circular knitting machine of the type in which yarn is fed at a plurality of circumferentially-spaced feeding positions around the machine, the combination of a yarn furnishing device at each position, and a common gear for driving all the devices, each of which devices comprises two rotary furnishing members co-operating to feed the yarn between them, and for each device toothed change-speed gearing affording a choice among plurality of predetermined ratios for driving and furnishing members from the common gear, which change-speed gearing comprises a plurality of concentric driving gears having a differing number of teeth, a spindle for one of the furnishing members, a driven pinion displaceable along the spindle into mesh with any selected one of the driving gears, a driving connection between the pinion and the spindle, and means locating the pinion in its selected position.

Knitting needle with loop retaining attachment

Ernest L. Kadisch and Shirley Kadisch. USP 2 544 492, March 6, 1951.

In combination with a knitting needle having an elongated needle shank portion and a tip portion, having a chamber opening exteriorly thereof, at one end of the shank portion, a length of flexible and readily stretchable material secured at one end to one of the portions and normally disposed in the chamber, and means to retain a knitting loop upon the shank portion, comprising a removable member having an opening receiving a section of the tip portion when the removable member is in one position and the length is stretched to extend outwardly of the chamber, the removable member being secured to the other end of the length of flexible material.

Loopless toe construction

James T. McAden, Jr. *The Knitter 15,* 34-36 (March 1951).

The loopless toe construction in full-fashioned hosiery is effected by a continuation of the narrowing operation on knitting machines down to eight needles. The method replaces the tedious and troublesome looping operation, saving 12 to 15 cents on looping, reducing picks and pulls

by reducing handling, and causing less waste since there is no loose course to pull off.

The process was first used in Germany, but it is said that Julius Kayser & Co. controls American patents and are licensing the process to full-fashioned hosiery manufacturers. Photographs show various stages of the narrowing operation.

Manufacture of a raised lining fabric on circular knitting machines

Emil Michael. *Textil-Praxis 4,* 229-32 (May 1949); *in German.*

The manufacture of a raised lining fabric on circular knitting machines is described. A number of attachments for the stuffing threads on plain and patterned materials are illustrated; photographs of several types of fabric are shown. The knitting of these types is described under the following headings: plain, double, long-striped, figured, and stuffing thread linings. Diagrams of hooks, sinkers and stitches are given.

Perfect warp knitting

Anon. *Am. Wool Cotton Reptr. 65,* 9-10 (Mar. 29, 1951.

Continuing the discussion on features of the Blue Ridge Textile Co., this article discusses the quality control laboratory at this mill which was one of the first complete laboratories for quality control in the warp knit industry. Tests for tensile strength, sunlight and wash fastness, shrinkage, etc. are conducted on the fabrics produced by the mill and yarns are tested also to meet accepted standards. A series of photographs serve to illustrate the work conducted in the laboratory.

Principles of warp knitting

J. H. Blore. *The Knitter 15,* 44, 46, 48, 49 (February 1951).

The general features of one, two, and three bar fabrics are outlined, and a close study of the movements of the guide bar is shown for two and three bar fabrics, with illustrations of lapping movements and stitches.

Principles of weft knitting—5

S. B. Bradley. *British Rayon & Silk Journal 27,* 56, 58, 59 (March 1951).

The principles of the straight-bar or "Cottons Patent" machine are described, and the various types of fabrics produced by the bearded needle machine are outlined.

Rayon tricot fabrics

M. H. van der Noordaa. *Enka en Breda Rayon Rev. 3,* 1-6 (1949); *in Dutch.*

Rayon yarn can be used in the production of knitted dress materials with excellent results. Rayon crepe yarn is especially suitable for this purpose. The processing and some applications are described and 3 actual samples are shown.

Rib knitters feature high production

Staff. *Textile Industries 115,* 105 (Apr. 1951).

Production rate of a new line of Supreme rib cloth knitting machines is reported to be approximately 32 yards per hour at 100% efficiency. Some of the features of these machines include: single action, micromatic dial-elevating and lowering adjustment; sturdy, dogless construction; simple conversion from plain to Swiss rib; simplified and instantaneous synchronization of dial to cylinder needles, etc.

Safety stop mechanism for knitting machines

Ralph H. Goodison (to Sapphire Hosiery Corp.) USP 2 543 547, Feb. 27, 1951.

In a full-fashioned knitting machine having a reciprocating slur bar, a friction rod concurrently reciprocated in predetermined timed relation therewith and a drive motor; a stop switch interposed between the slur bar and friction rod and arranged to be automatically actuated for stopping the motor upon accidental changing of the predetermined timed relation between the friction rod and the slur bar.

Stop motion for spring needle knitting machines

Edward Vossen (to Stop-Motion Devices Corp.) USP 2 545 324, Mar. 13, 1951.

A stop motion for a spring needle knitting machine having a retractable presser foot for each yarn feed, comprising an electric controlled means for retracting each of the presser feet, an electric controller for stopping the knitting machine, a detector switch for each of the electric controlled means for protecting its yarn feed and operated by the yarn of the feed, an electric circuit connecting the electric controller, the electric controlled means, and the detector switches for operating one of the electric controlled means and the controller whenever the detector switch of the one electric controlled means operates, and thread cutting means for each of the yarn feeds for cutting the yarn to the particular feed protected by the detector switch which operated, each of the electric controlled means including a yoke connected with its presser foot, means urging the yoke to retract the presser foot, and electro-magnetic means for normally holding the yoke forwards.

Yarn faults in knitting

Anon. *Textile Weekly 47*, 94 (Jan. 12, 1951).

An ideal hosiery yarn requires the following: (1) Evenness: this is important as slubs choke the needles and deform them. (2) Be soft spun: yarn strength is secondary, but excessive twist is fatal to good hosiery. When a yarn breaks it is seldom the individual fibres are fractured but have slipped away from each other, i. e., lost their cohesion, so that provided the yarn is strong enough to carry the needles when it is knitted it will have been looped so that there are anything up to 20 bends in an inch looped with the subsequent row of loops making for cohesion. The effect of excessive twist is the tendency to snarl and feed to the needles yarn snarled to twice the thickness intended. Spirality. (3) Fullness to give a well covered cloth. (4) Ooziness is another feature looked for to give a wooly handle to the fabric. (5) Some degree of resiliency, to allow the needles to draw the loops. (6) Colour and lustre. This is last, as if the fabric has to be dyed it is not so important, but many knitted fabrics are just steamed and pressed and used in the grey state, in which case colour and lustre would take a more prominent place. Even on such fabric as meat wraps colour is still important, as a butcher taking delivery of a carcass in a wrapper of poor colour would presume it had been in the freezing plant longer than one in a whiter wrapper. (7) Above all, the yarn delivered on cone must be well wound.

Welt turning mechanism for straight bar knitting machines

Harry Wilfred Start and Ernest Start (to William Cotton Ltd.) USP 2 544 187, March 6, 1951.

Welt turning mechanism including the combination, with means for supporting a plurality of needles, and a stationary support; of a welt bar slidably mounted on the stationary support and having a plurality of welt hooks adapted to cooperate with the needles; advancing and retracting means for moving the welt bar on the stationary support toward the needles for receiving loops or kinks of an initial welt course in the welt hooks and to return the initial course to the needles; auxiliary means for withdrawing the welt bar from the needles during the knitting of at least an initial part of the welt; and means for periodically imparting a quick retraction to the welt bar to disengage the welt hooks from the initial welt course when the latter has been returned to the needles.

Yarn carrier

Raymond J. Good (to Fred C. Good & Sons, Inc.) USP 2 542 960, Feb. 20, 1951.

A knitting machine yarn carrier comprising a finger, jaws on the finger adjacent to an end thereof, a leaf spring, a tube on the spring and engaged by the jaws, and a headed member detachably connecting the spring with the finger above the tube.

Special fabrics C 4

Bonded web

Daniel C. Lippman (to Celanese Corp. of Am.) USP 2 544 797, Mar. 13, 1951.

A comforter quilt comprising celanese acetate staple fibers in the form of a mat or web, the surfaces of which have been fused to form skins. The mat is enclosed in a textile fabric which is then stitched in the form of a quilt.

Composite fibrous products and method of making them

Carleton S. Francis, Jr. (to American Viscose Corp.) USP 2 543 101, Feb. 27, 1951.

In a process for producing a composite product having the external appearance and characteristics of a felt-like product and comprising at least one layer of textile fabric comprising interlaced yarns and at least two layers of felt-like material, in which one surface of two of the felt-like layers is exposed and the other surface thereof is substantially permanently anchored to a layer of the textile fabric, the steps comprising depositing a multiplicity of discontinuous potentially adhesive fibers on both faces of the textile fabric, superimposing thereon a mixture of non-adhesive fibers and potentially adhesive fibers, and activating the potentially adhesive fibers to effect a binding together of the non-adhesive fibers by the activated potentially adhesive fibers wherever the latter occur in the composite product.

Nonwoven fabric substitute for chamois

Staff. *Textile Industries 115*, 97 (Apr. 1951).

X-Lint, a product of B. F. Goodrich Chemical Co., is a tough, long-wearing non-woven fabric which is impregnated with Hycar latex. It looks, feels, and absorbs water like chamois, but wears 3 times longer.

Parachute cloth problems

Anon. *Daily News Record 42*, 23 (Mar. 1, 1951).

W. Corry, chief of Air Material Command Textile Unit, describes some of the problems of parachute cloth manufacture at AATT conference, emphasizing need for research on decreasing fabric weight, improving opening of chutes under high pressure and improving finishing materials and procedures.

Polythene layer bonded to another layer by ethylene-vinyl acetate interpolymer adhesive

Aurelius F. Chapman (to E. I. du Pont de Nemours & Co.) USP 2 543 229, Feb. 27, 1951.

A flexible laminated product comprising a layer of polythene and a flexible support, the polythene being firmly united to the flexible support by an ethylene/vinyl acetate interpolymer having from 1.5 to 3.5 moles of ethylene per mole of vinyl acetate.

Waffle weaves improved by Navy for underwear

Anon. *Daily News Record 42*, 20 (Mar. 1, 1951).

T. Seery of Navy's Clothing Branch Research and Development Div., tells AATT conference group that weight of waffle weave knit underwear fabrics has been reduced from 14 to 8 ounces per square yord without loss of insulation qualities. Also describes other recent developments in underwear fabric constructions.

Inspection and testing C 5

A fatigue test for tire cord

Chester B. Budd. *Textile Res. J. 21*, 174-9 (Mar. 1951).

A new fatigue test for yarns and cords has been developed that is based on repeated flexings or bending of the cord while it is maintained under a static load. An index of fatigue life is the time taken for the cord to break under this load. The mechanism of failure is indicated to be an internal abrasion between the fibers (filaments) of the cord structure. Lubricating the filaments with various textile finishes considerably improves their performance. It has also been shown that heat degradation of rayon tire cord can be more adequately studied with this machine than by the use of a standard tensile test. It is shown that the application of increasing amounts of a commercial adhesive to rayon tire cord progressively lowers the flex life of such cords, up to a point. It is also shown that high tenacity rayon cord made from cotton linters, regardless of its manufacturing source, has always been

superior to wood-pulp rayon in this test. The test rates the various textile materials used or suggested for use in tires in the correct relative order and has indicated a reason for the overtwisting from the standpoint of loss in tensile from the maximum tensile, of commercial rayon cord structures.

Permeability of fabric

Lepine. *L'Industrie Tex. 67*, 172-5 (1950); *in French.*

A detailed description is given of the principles, construction, and operation of the Schmerber "Porosimetre", an apparatus for determining the pressure required to cause water to pass through the interstices of a fabric, the fibers of which have been rendered waterproof.

The estimation of quality of textiles

H. Bohringer. *Textile Praxis 6*, 53 (Jan. 1951); *in German.*

The author outlines the estimation of a quality number which would give an idea of the behavior of a fabric in use. It is necessary to select a number of fundamental properties of fibers which are then compared and brought on a common basis. The most important characteristics are breaking strength, elastic breaking strength, relative loop strength and flexing strength. The fibers investigated were perlon, silk, wool, cotton, regenerated cellulose rayons and cellulose acetate rayons.

Anticholar agents

Rudolf Mönch. *Textil-Praxis 4*, 336 (July 1949); *in German.*

The scarcity of sodium thiosulfate led to experiments with other antichlors. Acidifying and antichloring can be dispensed with if bleaching is carried out between the 2 stages of washing at between 60° and 80°C. The effect of 8 chemicals was tested; results for various concentrations are tabulated. Sodium thiosulfate is the best agent, the next best is sodium disulfate. Ammonia is efficient only at higher concentrations and sodium hydroxide seems better. Fatty alcohol sulfonate was found to be unsuitable due to its stabilizing effect on chlorine.

Bleaching rayon staple

W. Hundt. *Textil-Praxis 4*, 26 (Jan. 1949); *in German.*

Whether to bleach rayon staple before or after spinning must be decided for each individual case. The lap should be bleached if rayon staple is to be delivered on cops. Cheeses and skeins should

be bleached in package form. Lap bleaching is economical for large quantities only. Bleaching of equal quality is obtained by both peroxide and chlorine methods; the latter, of course, requires a complete removal of chlorine after bleaching.

STANDARD FINISHING D

Clips for stentering machines

J. Dungler. Brit. P. 639 398. *Dyer 104*, 466 (Dec. 1, 1950).

Uneven drying of fabrics is claimed to be overcome by a new clip for stentering machines due to the selvedge being protected by the table and nipper plates of the clip. The clip includes a faller ending with a nipping portion and including an upper tail piece for opening the clip when it meets a stationary stop. A table is provided including a series of bars separated by gaps or notches, the breadth of each chosen so that the selvedge may freely form waves or puckers without these being too large. The faller also has notches with each tooth corresponding to one bar of the table. Hot air is blown through nozzles directly on the selvedge.

Fulling characteristics of a light-weight woolen fabric

Kermit S. LaFleur. *Am. Dyestuff Reptr. 40*, 145-8 (Mar. 5, 1951).

A comparison of the felting properties of various media has been made on the basis of (1) rate and degree of felting, and relative irreversibility of felt produced (2) relative freedom from wrinkles and cemented folds, and (3) desirable hand.

Products which are fat-derived to a high degree (e.g., soap, sulfonated tallow, quaternary fatty acid amide), and solid at normal room temperature, seem to produce the most satisfactory felts when judged by freedom from cemented folds and kind hand, but the fulling rate of such materials is slow; it is uncertain whether slow fulling is an essential factor or merely a coincidental property of the more desirable media.

New heavy duty surface batching machine

Anon. *Textile Weekly 47*, 248 (Jan. 26, 1951).

The heavy-duty surface batcher is designed to produce good solid rolls of cloth at constant speed with a large capacity. It is suitable for rolling any cloth, especially cottons and rayons in any desired width, and will find its greatest use in batching after bleaching, when a good firm roll is most essential.

The machine is designed to maintain a constant speed throughout the operation of batching, irrespective of the diameter of the batch, and an even tension is maintained on the cloth during the operation of batching. The machine features a controlled tensioning device ensuring that the cloth is always at the same tension and that a constant speed is maintained. This feature of constant speed is noteworthy when one remembers the older type of batching machine where the periphery speed of the roller increases rapidly and the roll builds up and tends to give irregularities in the final result.

Important details of the machine include incorporation of the Durrant patent cloth guider, ensuring accurate feeding. The frame of the machine is of steel all-welded construction and the machine is motor-driven through a primary V-belt drive and a secondary chain drive. All the drives are contained in the side frame, enabling the design to be finished with a streamlined casing which prevents contamination of the cloth by dirt or oil from the moving parts.

The rate of feed is stated to be 150 yards per minute and the rollers can be built up to a maximum diameter of 4 ft., permitting 1,000/2,000 yards of cloth to be rolled in a single batch. Because of the great weight of cloth contained in each batch, the final rollers are placed low on the machine to facilitate handling.

Observations on enzymes for textile processing

J. H. Downey. *Textile Age 15*, 30-32 (March 1951).

The enzymes used in textile processing are described as bio-chemical or bacterial catalysts which bring about hydrolysis or solubilization of carbohydrates and proteins mainly in the form of sizes so that the latter may be removed from textile fibers in hot aqueous liquors. Various enzymes are described, those for de-sizing cotton and rayon fabrics being diastatic and pancreatic enzymes. The de-sizing processes for various textiles including cotton and rayon fabrics are outlined.

Relationship between detergency and adsorption by the fiber. K. McLaren. *J. Soc. Dyers Colourists 66*, 521-29 (Oct. 1950).

Presents the theoretical aspects of the problem first, and then discusses the experimental procedures used and the results obtained. The effects of temperature and detergent concentration and the effect of sodium chloride concentration are discussed.

Rollers give uniform tension

B. H. Wilson, A. J. P. Martin, & O. N. Thompson, Brit. P. 641,466. *Dyer 104,* 465 (Dec. 1, 1950).

See front section.

Swelling proof finishes: evaluation

M. Munch. *Textil-Praxis 4,* 396-400 (1949); *in German.*

The phenomenon of swelling and its importance in the textile industry are discussed. The process which attempts to make fibers fast to swelling by making them hydrophobic is dismissed and several chemical treatments and their effect on changes in the fiber structure are considered. Shrinking as affected and caused by swelling is dealt with in great detail; the structural changes are illustrated and a molecular diagram shows the part played by van der Waals forces. Several diagrams explain the influence of OH-group disposition on the degree of swelling. Hydration or solvation, and the importance of potential are discussed. Cohesion and other properties connected with swelling may be taken as a measure of the amorphous portion of a fiber and indirectly of fiber quality.

Textile finishing developments

Anon. *Textile Weekly 47,* 110 (Jan. 12, 1951).

While bleaching and dyeing may contribute much towards making fabrics and garments more attractive and more serviceable to those who buy and use them, it has to be admitted that finishing processes are at least as important and probably more so, for it is by these final treatments that textile materials are given that appeal which is needed to induce the public to take notice of textile goods, whatever may be their intrinsic merit. At all times the finish can make or mar a fabric or garment.

Aspects of finishing discussed in this article are as follows: former finishing difficulties; use of new fabrics; importance of fabric structure on finish; finishing with resins; important factors in finishing with resins; proprietary resin products; vinyl resins; preparation of resin dispersions; resin particle size controls the finish; an improved trubenizing process; and anti-crease finishing developments.

Textile finishing developments

Anon. *Textile Weekly 47,* 242 (Jan. 26, 1951).

Discussion of finishing developments includes the following: production of soluble threads; new threads; unshrinkable finishing of wool; reagents; slow reaction of wool with chlorosulphamic acid; a review of modern processes; recent developments with resin processes; use of silicones in unshrinkable wool finishing; and textile finishing machinery.

The hydrogen peroxide dry-in process for bleaching wool

E. S. Shanley, H. O. Kauffmann & W. H. Kibbel. *Am. Dyestuff Reptr. 40,* 1-4 (Jan. 8, 1951).

This is the study of the hydrogen peroxide dry-in process for bleaching wool. The process is shown to be simple and economical, and very suitable for wool to be dyed. However, hydrogen peroxide bleached wool is especially susceptible to darkening during dyeing unless suitable precautions are taken to destroy residual peroxide traces.

Practical methods are described by which to obtain the best bleaching results and the brightest dyeings.

Ultrasonics for finishing synthetic textiles

Anon. *Skinner's Silk & Rayon Rec. 25,* 38 (Jan. 1951).

With a new ceramic (a barium-titanate material) as the sound wave-emitting element, use of ultrasonic energy is now possible. The ultrasonic sound waves are produced by applying electric current to certain types of crystals. These crystals, called "poezo-electric", have prevented the industrial application of ultrasonic energy. A new ceramic crystal has been evolved which overcomes previous limitations. Potential textile applications of ultrasonic energy include: dyeing hydrophobic fibers (nylon, Orlon, etc.); making stable emulsions; making aqueous solutions of "water-insoluble" materials such as waxes; dispersing oil-soluble dyes or tints in water; homogenizing sizes and dyes; speeding scouring and for desizing; speeding wool dyeing and oxidizing water soluble dyes. In general, application is posible in any textile process which takes place or can take place in a liquid medium.

DYEING AND PRINTING E

Accelerated wash fastness tests: new ratings for vat dyes on cotton and spun rayon

Anon. *DuPont Tech. Bull. 7,* 30-6 (Mar. 1951).

The American Association of Textile Chemists and Colorists in conjunction with various members of the dyeing and laundering industries

has developed a new, more rapid method of evaluating the colorfastness of washable fabrics. This accelerated test provides the textile industry with a means of approximating in one 45-minute operation the color destruction and abrasion action of five average commercial home launderings.

Adhesives in textile printing

Anon. *Dyer 104*, 455-7 (Dec. 1, 1950).

Adhesives, which may be classed under the headings of gums, waxes, and resins, have many uses in roller, screen and hand block printing. In roller printing, adhesives are used to stick the lapping ends on to the bowl of the printing machine so as to insure that the lapping is firmly fixed in place and will not shift during printing. In printing machines where the cloth is delivered from the machine by plaiting down motions, the wooden rollers of the plaiter may be covered with grey cloth, using an adhesive, so as to provide the amount of pull required by the plaiter to keep the fabric properly tensioned. End cloths are used to keep the ends of goods straight and taut when entering printing machines, and adhesives of the wax type may be used to join the back grey and the end of the end cloth so that the goods enter straight without damage to the back grey. Adhesives may be used in printing crepes and loosely constructed cloths by applying a gum from the cover roller to the back grey so that the cloth will adhere to the back grey and will stay in position.

In screen printing, adhesive tapes are used to join the wood frame of the screen and the screen gauze, and adhesives are used to mount the cloth on the printing surface as well as to combine the cloth with a back grey so that the combined cloth can be laid down on the adhesive-topped table.

In hand block printing adhesives are also used to mount loosely woven fabrics on the table. A dry gum may also be used in this connection. Dry gums are also used in hand block and roller printing to give adhesive properties to print pastes with starch bases when adhesive properties are lacking.

Application of Albigen A

M. Brauer. *Melliand Textilber. 32*, 53-6 (Jan. 1951); *in German.*

The author first discusses the chemistry of non-ionogenic levelling agents with affinity to the dyestuff, dealing especially with the present state of our knowledge, according to which these bodies behave in aqueous solution like cationic

compounds with capillary activity in the presence of salts and so forth. In connection therewith the author goes on to mention Albigen A-polyvinyl-pyrrolidon and the behavior of that body with its affinity, which deviates from that of the compounds hitherto used, to the various dyestuffs and fibers. Evaluation of the knowledge gained for practical dyeing is discussed in detail, whereby the following fields of application are mentioned: 1) Stripping dyes with prints and vat dyes; 2) Stripping prints with Naphtol AS dyes; 3) Stripping dyeings with sulfur dyes; 4) Clearing dyes with direct dyes; 5) Clearing the cellulose fibers in mixture fabrics; 6) Preventing goods dyed with loose direct dyes from bleeding into white goods washed with them; 7) Producing semi-tone effects. In conclusion the author discloses an analogy which unmistakably exists between the application of polyvinylpyrrolidon in medicine, on the one hand, and in the textile industry in stripping baths and the like, on the other hand.

Developments in production technology during 1950

Anon. *British Rayon & Silk Journal 27*, 50-51 (March, 1951).

A survey of British patent literature for 1950 shows the practical developments in dyeing, printing, and finishing techniques for rayons and synthetic fibers. 25 references.

Displacement of dyed cotton fibers

R. Haller. *Melliand Textilber. 32*, 50-2 (Jan. 1951); *in German.*

This article deals with the surprising phenomenon that dyed fibers in water under pressure give evidence of remarkable displacements, whereby the dyestuff on the fiber not only becomes inhomogenous by forming conglomerates, but tends to form deposits preferably in the lumen of cotton fibers, often in the form of well-developed crystals. This article aims at tracing that wandering of the coloring matter through the cell-wall and the causes that make for crystallization.

Dyehouse machinery trends

C. C. Wilcock & R. A. MacFarlane. *Dyer 104*, 459 (Dec. 1, 1950).

Main developments in loose fiber dyeing include twin propellor agitation for circulating the dye liquor and means for more simply removing the dyed material from the loaded unit. In yarn dyeing equipment, the Pegg Pulsator gives intermittent flow of liquor which insures

maximum penetration. A straight shaft motion and small square rollers are being used in the rotating roller type of machinery. An interesting development in hank, hosiery, etc. dyeing is the Ebflo machine which is designed to achieve an intermittent liquor displacement from an enclosed chamber into a vessel containing the goods. The main trend in package dyeing has been the use of stainless steel and more efficient pumps; and 3 chief methods have been used for rayon cake dyeing: (1) Obermaier type machines; (2) the adaptation of standard dual flow enclosed cheese dyeing machines; and (3) Courtauld cake dyeing machine. In hosiery dyeing, the Grid flow machine is one of the more recent developments. Improvements and modifications in the jigger include: stainless steel tanks fitted with light-weight rollers running on ball or roller bearings, a differential driving mechanism for controlling fabric tension, totally enclosed jiggers, etc. General trends in winches are toward machines which have less drastic effect on the fabric and stainless steel winch becks and reels are finding increased use. Finally, mention should be made of the Standfast process which is undoubtedly a technical advance in vat dyeing methods.

Dyeing of Chemstrand

Jackson Woodruff. *Am. Wool Cotton Reptr. 65,* 24 (Mar. 29, 1950).

In this abstract of a discussion on dyeing Chemstrand acrylic fiber and its blends, it is noted that most acetate dyes and acid dyes will dye Chemstrand fiber at elevated temperatures, but the fastness to light is usually poor and fastness to washing varies. A presetting operation by wetting out at temperatures near 200° F. is important, and scouring in open width has been of assistance to avoid wrinkles during dyeing. In dyeing blends with wool in light to medium shades acetate dyes can be used to bring up the acrylic fiber to shade with acid dyes on wool. In dark shades for wool and Chemstrand blends; difficulties arise since with wool or acid dyes, the wool will absorb the dye much more rapidly and will not give a union. More work is necessary on vat, naphthol, sulfur, and direct dyes, but all classes show promise in dyeing Chemstrand.

Dyeing of mixtures containing rayon staple 2

C. P. Tattersfield. *British Rayon & Silk Journal 27,* 52-3 (March 1951).

One-bath methods may be used on blends. Direct cotton dyes are used for the viscose staple

only, and neutral dyeing acid dyes are employed for the wool content of the blend. Three dyes may be required to obtain the necessary shade on each fiber, and therefore six dyes may be present in the dyebath. The dyer may select his own direct cotton and neutral wool dyes, or he may purchase union fast mixtures put out by the dye manufacturer. Procedures for both methods are given, though the latter is said to have the advantage of probably reducing the possibility of off-tone effects due to bad weighing out of the various dyes in the mixture.

Dyeing of new synthetic fibers

Paul L. Meunier. *Am. Dyestuff Reptr. 40,* P51-4 (Jan. 22, 1951).

Orlon acrylic fiber, an addition polymer made by polymerizing acrylonitrile, has a moderate affinity for only three classes of dyestuffs under ordinary dyeing conditions, namely, acetate, vat and basic dyes. It may therefore be used advantageously as an undyed effect thread in the dyeing of piece goods. The author shows how carriers, swelling agents and high temperatures (212° and 250°F) may be used to increase the depth of dyeing of these colors on Orlon and also to extend the number of dyestuff classes that are applicable to Orlon. Staple Orlon has more affinity for all dyes than has filament Orlon.

Fiber V, new synthetic fiber produced from terephthalic acid and ethylene glycol, likewise has limited affinity for dyestuffs. The author explains how the three devices employed for increasing the affinity of Orlon may also be used to increase the dyeability of Fiber V.

Dyeing of wool with vat colors with particular emphasis on the anthraquinone types

Arthur E. Weber. *Am. Dyestuff Reptr. 40,* P72-83 (Feb. 5,1951).

It has been found that, by carefully observing a number of critical features, which are collectively responsible for the success of the dyeing process, practically all of the anthraquinone vat colors can be dyed on wool in light, medium and dark shades including black, without undue adverse effect on the tensile strength, elasticity and hand of the fiber. For the same reason as in the dyeing of cotton, rayon and silk, both anthraquinone and indigoid types are needed for coloring wool in a complete range of shades of maximum brilliancy and fastness properties.

Dyeing textile materials made from vinyl halide-acrylonitrile resins at high temperatures in the presence of moisture

Theophilus A. Field, Jr., and Archie G. Schoonover (to Union Carbide and Carbon Corp.) USP 2 543 316, Feb. 27, 1951.

Process for improving the wash fastness and crock fastness of filaments, yarns, fabrics and other textile articles made from a vinyl halide-acrylonitrile copolymer resin which has been treated with a dyestuff for which such resin has a low affinity, which comprises heating such textile article at an elevated temperature in the presence of moisture and under a pressure ranging from atmospheric pressure to around twenty pounds per square inch, the temperatures being within the range from 105° C. to around 125° C. when the moisture is under superatmospheric pressure in the form of at least one member of the class consisting of steam and hot water, and ranging from around 125° C. to 150° C. when the moisture is in the form of superheated steam at atmospheric pressure, the time of heating varying inversely with the temperature, thereby providing a dyed article of excellent wash fastness and crock fastness.

Effect of treatment with Zelan AP paste and Aridex L Conc. on the shade and fastness properties of acid dyes on nylon

Anon. *DuPont Tech. Bull. 7*, 37-44 (Mar. 1951).

All the Du Pont acid dyes were applied to semi-dull nylon piece goods. Portions of each of the dyeings were treated to retain approximately 3.0% of the fiber weight of ZELAN AP Paste or 5.0% of ARIDEX L Conc. Treated and untreated dyeings were compared to determine the effect of these treatments on the shade, light (Fade-Ometer) and crock fastness. The results were tabulated and are included in the experimental data.

In most cases, neither ZELAN AP Paste nor ARIDEX L Conc. had any significant effect on either the shade or colorfastness properties. To determine whether or not the shade changes attributed to ZELAN or ARIDEX might not have been caused by the curing temperature (275°F. for ZELAN and 250°F. for ARIDEX), a set of control dyeings was exposed in the curing oven under conditions similar to those used in making the ZELAN treatments. In no case did this make a significant change on any of the dyeings.

General Dyestuff shows new continuous fiber-dyeing unit

Anon. *Textile Age 15*, 39 (March 1951).

See front section.

Machine for treating textile goods with dyes and other liquids

Guy Storr Helliwell and John Leslie Swindall (to Mellor Bromley & Co. Ltd.) USP 2 544 424, March 6, 1951.

A machine for treating textile goods with liquid comprising a tank adapted to receive the goods to be treated, a perforated plate disposed within and spaced from the bottom of the tank to provide a false bottom.

New continuous unit speeds fiber dyeing

Anon. *Am. Wool Cotton Reptr. 65*, 13, 49-50 (Apr. 5, 1951).

The Williams continuous fiber processing machine, developed by General Dyestuff Corp., for the chemical treatment, dyeing, and scouring of fibers, stock, or staple uses the principle of passing a large quantity of goods through a small dye bath to effect economy and to shorten the contact time. Goods enter in lap or stock form laid evenly on an endless chain link belting of stainless steel. As the belt goes over the roll to enter the bath vertically, a second belt is synchronized to sandwich the material between them. The enmeshed material leaves the bath vertically and passes through a light draw-roll nip. The goods are then drawn from the belts through a 5-ton nip and onto another endless belt which carries it under several sprays of water or solutions of chemicals. A second spray treatment follows; and after being drawn through a 15-ton nip, the goods are fed to an inspection apron. Finally, the material is carried by truck or belt to any further processing unit necessary. Dyeing time can be varied from 30 to 90 seconds, and the estimated capacity of the unit ranges from 500 to 3000 pounds per hour based on top speed of 33 yards per minute and 1 to 2 pounds per yard on the conveyor belt.

New features in screen tensioning device

Anon. *Dyer 104*, 485, 487 (Dec. 1, 1950).

A new screen tensioning machine, made by Cheskova Ltd., is reported for setting gauze on a printing frame in accurately reproducible conditions. Independent means of tensioning the warp and weft are provided with a reaction on the frame equal to the pull on the gauze so that the shape of the frame remains unaltered after the frame has been removed from the machine. The operator has complete control over every detail of the screen fitting, and work is reduced to a minimum.

New wool dyeing technique

Anon. *Dyer 104,* 463 (Dec. 1, 1950).

A new dyeing technique, discovered by Arthur J. I. Harding of Fosse Dyeworks Ltd. is reported to allow 2 or more contrasting colors to be dyed on wool at the same time in the raw, yarn, or fabric state. Results also obtained by this new method include a fleck effect, an ingrain effect without using ingrain yarns and tone-in-tone colors. Either fast dyes or ordinary dyes may be used, and the product can be treated for shrink resistance.

Nylon dyeing — theory and practice

G. T. Douglas. *Am. Dyestuff Reptr. 40,* P122-26 (Feb. 19, 1951).

The theory of the dyeing of nylon is presented in a relatively simplified form, and the part that the chemical groupings in nylon play in dyestuff uptake is discussed. The dyeing behavior of nylon is compared and contrasted with that of wool. The value and limitations of the various dyestuff ranges for nylon are outlined, and some of the difficulties that are met in practice in the dyeing of this fiber are dealt with. A chrome dyeing technique developed as a result of the fundamental researches into the dyeing mechanism of water-soluble dyestuffs on nylon is given, and also the dyeing behavior of vat and azoic dyestuffs is discussed. Finally, the problems involved in the coloration of wool/nylon union materials are stated and recommendations are presented for the dyeing techniques to be employed.

Package dyeing of knit goods with vat colors

Anon. *DuPont Tech. Bull. 7,* 14-16 (Mar. 1951).

In the trade, cotton knit goods are commonly vat-dyed on a reel machine, a process which entails considerable difficulty in obtaining level dyeings, even with careful supervision. A new method employing a closed circulating-type machine, in preference to the open reel, produces dyeings of greatly improved levelness and at a lower cost.

Essentially this procedure consists of uniformly winding the knit goods around a perforated or fluted spindle to form a package, cheese or cake. The dye liquor is pumped into the hollow core of the spindle and out through the layers of tubing, or in reverse fashion—through the wound layers of knitted cotton and out through the spindle. An economical advantage is effected since the dyeing is made in a closed system, thus decreasing the quantity of reducing

chemicals necessary for a standard shade.

Process for coloring textile materials

Charles E. Maher. USP 2 546 681, Mar. 27, 1951.

A process for forming permanent and true black colors or pigments, possessing excellent wash fastness and light fastness, upon hydrophobic textile materials, which comprises forming a coupling bath containing phloroglucinol (1,3,5-trihydroxybenzene) as the coupling agent, dyeing the hydrophobic textile material with a selected diazotizable azo base black dyestuff present in the ratio of at least 3 mols of the black dyestuff per mol of phloroglucinol, working the thus dyed hydrophobic textile material in a diazotizing bath to form the diazonium salt of the selected diazotizable azo base black dyestuff, eliminating from the coupling bath prior to the coupling operation therein any free nitrous acid which may be present in the coupling bath, and then working the thus dyed and diazotized hydrophobic textile material in the coupling bath to complete the coupling operation therein.

Process for stripping color from dyed wool

Ernest R. Kaswell (to Fabric Research Lab. Inc.) USP 2 549 099, Apr. 17, 1951.

The process for stripping color from keratinous material which comprises treating the keratinous material with an electrically-conducting acid liquid stripping solution containing metallic ions selected from the group consisting of vanadium, titanium and chromium ions in a low valence state, whereby color in the keratinous material is reduced and stripped by the reducing action of the low-valence ions with accompanying oxidation of the ions to a higher valence state, reducing the valence state of ions so oxidized by electrolysis of solution, and thereafter contacting the keratinous material with the solution.

Reduce steam consumption with control instruments

Leo Walter. *Textile World 101,* 113, 115, 117, 119 (April 1951).

Various methods of dye-temperature control are available that save steam and fuel. Some of the methods that can effect savings are low-temperature dyeing, thermally efficient vats, and throttle-type steam controls.

Removal of dyes from Fiber V

Anon. *DuPont Tech. Bull. 7,* 11-13 (Mar. 1951).

The removal of dyes from Fiber V is usually accomplished by treating the fibrous material with strong inorganic oxidizing or reducing agents. In most cases this treatment has produced results which were unsatisfactory because only a moderate reduction in shade was obtained. To improve the degree of stripping of dyed staple, top, tow, yarns and fabrics, consisting wholly or in part of Fiber V, several new methods have been tested.

Review of textile coloring and finishing

G. L. Boyer. *Calco Technical Bulletin No. 818.*

The booklet covers the important scientific contributions that have been published on the dyeing of wool, cellulose acetate, nylon, cotton, and viscose rayon, and on the printing and finishing of textiles. References include 145 entries.

Spectrophotometric studies of continuous dyeing

F. T. Simon. *Am. Dyestuff Reptr. 40,* P101-4 (Feb. 5, 1951).

The object of this study is to present a simple, yet fairly precise procedure of measurement of dye mixtures and to show data obtained from actual mill runs.

The elimination of all highly technical functions from the spectrophotometric part of this work was kept in mind so that a method adaptable for "in the plant" control is demonstrated. Several types of continuous dyeing are discussed.

Studies in textile printing: practical applications of the ANALYTICAL METHOD

R. D. Greene, A. F. Klein & F. Fordemwalt. *Am. Dyestuff Reptr. 40,* P127-30 (Feb. 19, 1951).

The ANALYTICAL METHOD of evaluating vat prints has been applied to the study of vat gums, pigment-pad-steam vat printing, screen printing, and to comparisons between laboratory and mill agers. The method has been found to be applicable to situations that could not be treated by evaluations depending on color-value measurements alone.

Textile print blanket

Edward W. Merrill (to Dewey & Almy Chemical Co.) USP 2 547 220, Apr. 17, 1951.

An endless print blanket composed of a multiplicity of rubber-coated circumferentially coextensive textile fabric plies, having the fabric at least of its top ply butted along a line of interfitted V's having bases which are but small fractions of the width of the blanket, the length of the V's being at least a small number multiple of the base dimension, the blanket being vulcanized into a unitary structure.

THE COBBLER, 1950-51, VOLUME III

The Huddersfield Local Centre of the Guild of Technical Dyers. 58 pages.

An annual publication of outstanding lectures and articles on dyeing, this present volume contains five feature articles as well as questions and answers from readers on B. Kramrisch's lecture on "Carpet and Rug Dyeing", which appeared in last year's volume.

Included in the present volume are: "A Chemist in a Textile Factory" by D. Hanson; "Dyeing in Pressure Circulating Machines" by J. Henderson; "The Application of Carbolan Dyestuffs to Wool Yarn" by H. Crook, D. R. Lemin, and I. D. Rattee; "Some Points of Interest Concerning the Use of Sulphur Colors" by H. Senior; and "The Work of the British Color Council in Art and Industry" by R. F. Wilson.

The continuous dyeing of nylon fabrics

W. George Parks. *Am. Dyestuff Reptr. 40,* P14-29, 32 (Jan. 8, 1951).

Preliminary tests indicate that it is possible to dye nylon fabrics by the use of acid colors by padding the dissolved dyestuff and steaming in conventional vat-dyeing equipment. The chemistry and the physical nature of the phenomena are discussed.

Spectrophotometric data are tabulated, showing the color value, wash fastness, influence of variation in length of steaming, influence of acids or assistants, and influence of heat treatments. Common dyeing problems of migration, preferential sorption, warpiness and barre effects are discussed from data obtained during plant dyeings.

The cuprous ion method of dyeing ORLON acrylic fibers with acid dyes

Anon. *DuPont Tech. Bull. 7,* 45-52 (Mar. 1951).

During the past several months, a number of textile firms in cooperation with the Rayon Department have been processing experimental "ORLON" acrylic staple fibers, sometimes spoken of as A-3 and A-4 and at other times referred to as regular and improved staple. Both of these fibers were dyeable with acid, chrome and selected direct colors from baths acidified with sulfuric acid.

Recently, a new type "ORLON" staple, des-

ignated as Type 41, has been under evaluation. This staple fiber, like "ORLON" Type 81 continuous filament and spun yarns, is dyeable by a technique similar to that recently published by Carbide and Carbon Chemicals Division, Union Carbide & Carbon Corp., for dyeing their acrylic fiber, DYNEL.

The Weber-Fechner Law and dyeing strengths

I. H. Godlove. *Am. Dyestuff Reptr. 40,* P49-50 (Jan. 22, 1951).

In a recent article, H. Cikurel showed that more nearly equal steps visually can be obtained in a series of dyeings at increasing strengths if the dye strengths of a single dye are increased logarithmically rather than arithmetically. This was claimed by an application of the Weber-Fechner law relating stimulus to sensation.

Mr. Godlove points out, however, that there is not a strict relation between dye strength on a fiber and visual stimulus, and that therefore the Weber-Fechner law cannot be accurately employed to relate amount of dye on a fiber and equal visual steps.

Vat dyeing of acrylonitrile polymers

Robert Joseph Thomas (to E. I. du Pont de Nemours & Co.) USP 2 543 994, March 16, 1951.

A process of vat dyeing structures prepared from acrylonitrile polymers containing at least 85% acrylonitrile which comprises treating the structures with an aqueous dye bath containing 0.5% to 5% of an aromatic monoamine containing no other solubilizing group and an alkaline solution of a reduced vat dye selected from the group consisting of indigo and thioindigo vat dyes.

SPECIAL FINISHING F

After-treatments for viscose rayon

B. Sutcliffe. *Dyer 104,* 430-1 (Dec. 1, 1950).

This abstract of a talk on "man-made Fibers in the Textile Industry" includes brief discussions of resin treatments on viscose rayon to give a wider range of properties and also modern views on fiber structure.

Color and stain removers for fabrics

Chester M. Gooding & Eugene D. Seiter. (to The Best Foods Inc.) USP 2 548 892, April 17, 1951.

A solid dry color and stain remover for fabrics consisting essentially of 100 parts of basic zinc sulfoxylate formaldehyde, a solid dry α-hydroxy carboxylic acid and 1 to 20 parts of para diisobutyl phenoxy ethoxy ethyl dimethyl benzyl ammonium chloride, the solid dry α-hydroxy carboxylic acid and the amount thereof being selected from the class consisting of 45 to 150 parts of citric acid, 50 to 90 parts of tartaric acid, 60 to 200 parts of maleic acid and 70 to 200 parts of hydroxyacetic acid.

Finishing treatment for nylon

Anon. Brit. P. 640 960. *Dyer 104,* 466 (Dec. 1, 1950).

An improvement in liveliness, fullness, crease resistance, solvent resistance, melting point and dye receptivity is said to result from this finishing treatment for nylon fabrics. The treatment consists of impregnating a heat set fabric containing oriented nylon fibers with an acidic catalyst. The fabric, while maintained at fixed dimension against shrinkage, is then heated in anhydrous conditions with formaldehyde vapor. Catalysts should be non-volatile e.g., oxalic acid or ammonium chloride, maleic acid, p-toluene sulphonic acid, etc.

Fire retardant waterproof coating

Robert M. Stafford (to Johns-Manville Corp.) USP 2 542 721, Feb. 20, 1951.

A weather proof and fire-retardant coating consisting essentially of asphalt having a softening point of at least about 170° F., and finely divided filler material uniformly distributed throughout the asphalt and comprising 5-30% by weight of cellular perlite having a density within the range of 3-12 pounds per cubic foot.

Flame-proofing fabrics

Joseph Bancroft and Sons. Brit. P. 648 883. material comprised of twisted fibers with a resin 1951).

Progress for the flameproofing of textile fabrics by treating the fabric with a solution obtained by reacting phosphoric acid with urea (or similar non-metallic N-containing compound) and formaldehyde (or equivalent aldehyde-liberating substances), drying and curing at an elevated temperature (300-400°F).

Influence of resin finishes on mechanical properties of cotton

R. Aenishaenslin. *Ciba Review 84,* 3061-2 (Feb. 1951).

Test made on cotton fabrics treated with urea and melamine formaldehyde resins show that too long a curing is detrimental to crease-resist and anti-swelling effects, dimethylol-urea produces

the greatest loss in strength and the crease-resist and anti-swelling effects are approximately the same with all three resins used.

Method of impregnating fibrous sheet materials

Edward L. Kropa (to American Cyanamid Co.) USP 2 542 819, Feb. 20, 1951.

The method of impregnating woven sheet materials comprised of twisted fiber with a resin which comprises continuously passing the sheet material through a bath of the resin and at least partially untwisting the fibers of the material by imparting a simultaneous forward and side undulating motion to the material while in contact with the resin whereby gas entrapped within the material is released, the forward and side undulating motion being imparted to the material by passing the material in operative relationship with a roll rotating in a direction opposite to the direction in which the sheet material is passing through the bath and having distributed on its exterior surfaces a plurality of smooth, circular, knob-like, spaced projections.

Method of treating fibrous cellulosic materials to impart flame resistance thereto, composition therefor, and products thereof

Joseph W. Creely (to American Cyanamid Co.) USP 2 549 060, Apr. 17, 1951.

A method of imparting flame-resistance to a cellulosic textile material of the class consisting of natural celluloses, regenerated celluloses and mixtures thereof, which comprises impregnating the material with an association of an aqueous liquid composition containing ingredients comprising (1) a finely divided oxide of a metal of the group consisting of antimony bismuth, tin and titanium and (2) a thermoplastic substance containing at least 20% by weight of combined halogen and capable of rupturing under heat at carbon-halogen bonds, the ingredients of (1) and (2) which together are designated hereinafter as (A) being employed in a weight ratio of 1 part of the former to from 0.6-20 parts of the latter, and of an aqueous liquid composition containing an ingredient comprising (B) a water-soluble, metal-free nitrogen-containing salt of an amino phosphoric acid having an amino nitrogen atom attached directly to a phosphorus atom, which salt has a melting point of less than 200° C., the ingredients of (A) and (B) being employed in a weight ratio of 1 part of the former to from 0.2-8 parts of the latter, the aqueous composition containing the ingredient (B) having a pH of from about 3 to about 7; heating the impregnated material at a temperature within the range of about 135°-200°C.; and washing the resulting material to remove any residual water-soluble substances therefrom, the total amount of the ingredients of (A) and (B) with which the cellulosic textile material initially is impregnated being such that the finished flame-resistant textile contains from about 10% to about 75% by weight, based on the dry weight of the untreated textile, of wash-fast impregnant.

Method of treating fibrous cellulosic materials to impart flame resistance thereto, composition therefor, and products thereof

Jos. W. Creely & Theodore F. Cooke (to American Cyanamid Co.) USP 2 549 059, April 17, 1951.

A method of imparting flame-resistance to a cellulosic textile material of the class consisting of natural celluloses, regenerated celluloses and mixtures thereof, which comprises impregnating the material with an association of an aqueous liquid composition containing ingredients comprising (1) a finely divided oxide of a metal of the group consisting of antimony, bismuth, tin and titanium and (2) a thermoplastic substance containing at least 20% by weight of combined halogen and capable of rupturing under heat at carbon-halogen bonds, the ingredients of (1) and (2) which together are designated hereinafter as (A) being employed in the weight ratio of 1 part of the former to from 0.6-20 parts of the latter, and of an aqueous liquid composition containing an ingredient comprising (B) a compound selected from the group consisting of the guanidine and guanylurea salts of an oxygen-containing polyacid of phosphorus wherein the phosphorus atom has a valence of 5, the ingredients of (A) and (B) being employed in a weight ratio of 1 part of the former to from 0.2-8 parts of the latter, the aqueous composition containing the ingredient (B) having a pH of from about 3 to about 7; heating the impregnated material at a temperature within the range of about 135°-200° C.; and washing the resulting material to remove any residual water-soluble substances therefrom, the total amount of the ingredients of (A) and (B) with which the cellulosic textile material initially is impregnated being such that the finished flame-resistant textile contains from about 10% to about 75% by weight, based on the dry weight of the untreated textile, of wash-fast impregnant.

Modification of wool by the application of linear

synthetic polyamides

D. L. C. Jackson & M. Lipson. *Textile Res. J. 21,* 156-63 (Mar. 1951).

The effect of surface deposits of nylon and N-substituted nylons on the abrasion-resistance and felting shrinkage of wool has been determined. N-methoxymethyl nylons are much more effective than nylon itself, when applied from solution, in increasing the abrasion-resistance of wool fabric, but not in decreasing the felting shrinkage of the fabric. If the N-methoxymethyl nylon is first applied to the wool fabric from alcoholic solution and then hydrolyzed in situ by approximately 2N HCl, the polymer is found to confer non-felting properties on the wool. A deposit of approximately 3% by weight of polymer has been found to eliminate entirely the felting shrinkage of wool fabric under the conditions of test. The optimum degree of substitution of nylon for the production of non-feltability is between 5% and 6% combined formaldehyde, which corresponds to between 20% and 24%-NH groups substituted. The effectiveness of these polymers in increasing abrasion-resistance and decreasing felting shrinkage is explained on the basis of their adhesion to and covering power on the wool fiber.

Mothproofing — detergent combinations

H. C. Borghetty, W. N. Pardey & O. L. Sherburne. *Am. Dyestuff Reptr. 40,* P119-21 (Feb. 19, 1951).

This paper covers various types of moth-proofings agents and indicates that the loss of some of the wool-fabrics market to synthetic fibers could be avoided to some extent by the use of mothproofing agents. A new approach to the problem is offered by combining a substantive cation-active mothproofing agent with non-ionic synthetic detergents to give combinations that serve simultaneously as mothproofing agents and washing agents. This new development can be applied either in textile mills or in the household because of the low temperature at which the system can be made to function. Fabrics washed with specially prepared quaternary mothproofing agents plus ethylene oxide condensates can be stored indefinitely without danger from moths and carpet beetles.

Nylon materials reserved

Anon. Brit. P. 640 421. *Dyer 104,* 465-6 (Dec. 1, 1950).

The application of non-dyeing thio-derivatives of phenol or their reduction products to synthetic linear polyamide materials, such as nylon, is claimed to reduce the affinity of nylon for substantive, acid, sulfur, chrome, or vat dyes. In addition, nylon dyed or printed before the treatment is said to have increased fastness to water, acids, washing, perspiration, and cross dyeing without any decrease in light fastness after treatment with the thio-derivatives. The thio-derivatives used generally contain as free acids 26-40% of combined sulfur with those derivatives containing complex mixed metals containing less sulfur. Treatment is preferably carried out in 15 to 30 min. in aqueous alkaline solutions of thio-derivatives at boiling point.

Odor prevention in resin treated fabrics

L. A. Fluck, J. G. Keppler, T. F. Cooke, & C. L. Zimmerman. *Am. Dyestuff Reptr. 40,* P154-60 (Mar. 5, 1951).

Textiles that have been treated with thermosetting aminoplasts, such as urea-and melamine-formaldehyde resins, developed unpleasant odors under certain conditions. A mechanism for the formation of odor in fabrics that have been treated with these nitrogen-containing resins has been proposed. This mechanism suggests that the development of odor is due to the formation of amines. The addition of a formaldehyde acceptor, such as urea, to the resin bath was found to prevent odor formation in the treated fabrics. A sensitive, reproducible odor test for resin-treated fabrics was developed.

Research into rotting of textile fibers—I and II.

R. W. Moncrief. *Skinner's Silk & Rayon Rec. 25,* Part I on pages 118, 121, 125 (Jan. 1951); Part II on pages 274, 276 (Feb. 1951).

Micro-biological attack on fibers is due to true fungi and to bacteria. The true fungi reproduce by means of airborne spores; bacteria nearly always reproduce by fission.

Both fungi and bacteria are unable to use atmospheric carbon dioxide as a source of carbon, both need such foods as proteins and carbohydrates. Natural cottons contains oils, etc., on which fungi and bacteria can feed. If traces of sizing material are left on fabric these also provide good sources of nourishment. Raw fabric from which the size has not been removed is much more susceptible to micro-biological attack than is well-scoured and finished fabric.

Dark, warm, humid conditions generally favor the growth of fungi and bacteria, but the optimum conditions vary from one species to another. In particular some are more resistant to sunlight than others.

Cellulolytic activity is widespread, but by no means universal, among fungi. The activity of some four hundred species has recently been measured and reported.

Cellulose fabrics deliberately inoculated with a cellulolytic fungus will, if incubated at 20-30°C., in 2 weeks lose more than half of their strength —sometimes the loss is as high as 90-100%.

Zinc chloride was at one time used extensively as a fungicide on fabric intended for export. Nowadays salicylanilide (Shirlan) p-nitrophenol, mercaptobenthiazole and dihydroxydichlordophenylmethane are used. They are reasonably effective in giving protection against true fungi, but not very good against bacterial atack.

Resin treatment of wool fabric

John N. Dalton & Wm. B. Kaupin (to Pacific Mills) USP 2 545 450, Mar. 20, 1951.

The method of treating a wool fabric to enhance its dimensional stability under laundering conditions while preserving its properties of flexibility, tensile strength and soft hand and feel substantially equal to those of the untreated fabric, which comprises impregnating the fabric with an aqueous solution of 5% to 10% of the weight of the fabric of resin-forming materials comprising a methylolmelamine and formaldehyde, exposing the wet impregnated fabric to infra-red radiation to heat it substantially uniformly from surface to surface and immediately raise its temperature to 140°F. to 212°F. so that sufficient water is almost instantly driven off to leave about one-third of the original water content, thus converting the resin-forming materials to a viscous condition while the solution is maintained uniformly distributed through the whole thickness of the fabric, whereby the materials are immobilized therein against migration to the surfaces of the fabric, and thereafter polymerizing the resin-forming materials to water-insoluble condition by further heating the fabric to a temperature of 212°F. to 300°F.

"Saturant" bitumen as a textile rotproofing agent

A series of laboratory tests designed to estimate the relative efficiency of bitumen and other materials used as textile rotproofing agents has been carried out, using a new form of testing apparatus for the purpose. Pre-treatment with cuprammonium followed by bitumen saturation, or a single treatment with a mixture of bitumen and cresylic acid, provides better rot-protection than bitumen alone. (J. Soc. Chem. Industry, Feb. 1950)

The wrinkling of textile fibers and wrinkle-proofing technique

R. Dicker. *Rayonne Et Fibres Synthetiques 2,* 55-58 (Feb. 1951); *3,* 13-18 (Mar. 1951).

Part I is a review of the factors which influence the wrinkling of textile fibers wherein the mechanism of the wrinkle-proofing treatments with resins is examined, various wrinkle-proofing techniques and laboratory methods for the evaluation of the treatments are discussed. Part II is concerned with the relationship between the intimate structure of the fibers (their molecular structure and their orientation) and their tendency toward wrinkling.

Treatment of wool-containing textile materials

Linton A. Fluck, Jr., John E. Lynn & Eleanor L. McPhee (to American Cyanamid Co.) USP 2 539 366, Jan. 23, 1951.

A process of reducing the shrinking tendencies of a wool-containing textile material which comprises preconditioning the textile material by first treating it with an alkaline solution of a peroxy compound and thereafter removing the excess alkaline material, impregnating the preconditioned textile with an impregnant comprising a colloidal solution of a curable cationic aminoplast, and advancing the cure of the aminoplast in situ, the amount of the cured aminoplast with which the textile material is impregnated being sufficient to render it resistant to shrinking.

TESTING AND MEASUREMENTS G

Clothing and fabrics G 1

Dynel cuts work clothing costs

Anon. *Am. Wool Cotton Reptr. 65,* 25 (Apr. 5, 1951).

Results of tests on dynel industrial clothing made by Chem Wear, Inc., showed that dynel clothing has virtually an unlimited life expectancy. The fabric remains acid and caustic resistant permanently; will not support combustion; is not affected by repeated laundering; sheds dirt and grease, even wax, quickly and cleanly; dries in a fraction of the usual drying time; and requires little ironing.

R.H. and dimensional stability

W. von Bergen & C. S. Clutz. *The Dyer 104,* 361, 362 (Nov. 1950).

High humidities or change in humidities cause a movement in woolen fabrics that, like relaxation and felting, may be called a form of shrinkage.

Forstmann Woolen Co. laboratories studied the warp and filling movements that went on in cloth that was subjected to a change in humidity from 20 to 90% r.h. The solution then was believed to be arrived at when it was decided to deliver goods with a moisture content equal to the equilibrium obtained at 60% r.h.

Water and temperature are the means with which to produce a set in woolen fabrics. Case studies of shrinking procedure and their effects upon woolen fabrics are cited. Dimensional changes are said to be attributable to three causes: 1) change in moisture content of fabric: 2) relaxation shrinkage; 3) strain due to external stresses. A study of the correlation between the swelling of wool fibers and the motion of woolen fabrics is suggested. Detailer tests on r.h. and relaxation of fabrics after pressing are tabulated.

Instruments and instrumentation G 2

Flammability measurements

J. R. Blegen. *Gen. Electr. Rev. 53,* 9-12 (1950).

After a brief review of early attempts to perfect a flammability test for thin materials, a satisfactory testing instrument that has been developed is described. This instrument, in which a regulated flame is applied to the specimen held at an angle of 45°, is entirely automatic in operation, and both time of ignition, and rate of burning are obtained directly without any judgment on the part of the operator.

Mill managers see developments at ITT

Staff. *Textile Industries 115,* 95, 97 (Apr. 1951).

Uniformity and other testing devices of the Institute of Textile Technology were shown recently to plant managers of member mills of the Institute. Also shown was a new picker lap meter which measures inch-by-inch variations in picker laps.

Quality control and the new fibres

Ogden Clegg, *Textile Mercury and Argus 124,* 3226 (Feb. 2, 1951).

Taking the main properties of fabrics in order of their value, durability is the first essential, and tactile considerations, (handle and touch) come next. Appearance is of great importance.

A discussion of quality control takes into consideration the following: strength; testing procedure; moisture content; chemical resistance; and biological attack.

Quartermaster Laboratory

Anon. *Daily News Record 49,* 26, 32 (Mar. 12, 1951).

Details given of Army Quartermaster Corps $11,000,000 laboratory to be located at Natick, Mass.

The measurement of static electricity on fabrics

Mason Hayek & F. C. Chromey. *Am. Dyestuff Reptr. 40,* P164-68 (Mar. 5, 1951).

During the course of a study of problems arising from the static electrification of textile materials, it became necessary to devise a means of measuring static electricity on fabrics. This paper describes the instrument that was developed for the purpose and summarizes some of the pertinent information on static electricity. The instrument combines a machine for generating charges on fabrics and a means of measuring those charges. Examples of tests on fabrics treated with antistatic agents and untreated controls illustrate the kind of data obtained with the instrument and show how the static propensities of the test specimens depend upon the rate of decay of electrostatic charge on the surface.

The relating of laboratory data to mill practice

H. F. Clapham. *Am. Dyestuff Reptr. 40,* P84-90 (Feb. 5, 1951).

The Philadelphia Section of American Association of Textile Chemists and Colorists has constructed a single- and a multi-unit dyeing apparatus, in which wool dyeings can be carried out under controlled conditions of temperature and agitation for a study of the sorption and desorption of acid dyes on wool with variations of time and temperature. The same technique has been extended to the study of the dyeing of metallized acid dyestuffs on wool, of acid dyestuffs on bright filament nylon and of acid dyes on spun-nylon yarn.

The measurement of static electricity on fabrics

Mason Hayek & F. C. Chromey. *Am. Dyestuff Reptr. 40,* P164-8 (Mar. 5, 1951).

During the course of a study of problems arising from the static electrification of textile materials, it became necessary to devise a means of measuring static electricity on fabrics. This paper describes the instrument that was developed for the purpose and summarizes some of the pertinent information on static electricity.

Uniformity of grading of American, British and German lightfastness standards

I. H. Godlove. *Am. Dyestuff Reptr. 40,* P114-

18 (Feb. 19, 1951).

Dr. Godlove answers the criticism of the British Committee concerning his use of the Adams formula for measuring the degree of fading of standards for light-fastness and his conclusion that the American standards are more evenly graded than the British or German. He contends that the Adams formula is one of the best of the ten available, that it is the most convenient, and that it is especially accurate for small color differences when change of hue (shade) is slight. He also points out that the Adams formula was employed in England by Dr. Vickerstaff of Imperial Chemical Industries in a study of pigment fading. He repeats his contention that the American light standards are more uniformly graded than the European.

TEXTILE MILLS H

A new useful yarn

Anon. *DuPont Magazine,* 21 (April-May 1951).

Cellulose sponge yarn mops are now being used for industrial and institutional cleaning. The yarn is made by extruding fine-pore cellulose sponge material over strong cotton yarn, and the mops are being used on concrete, wood, and terrazo floors.

An economical and effective locking mechanism for storing textile beams

Neil L. Cunningham. *Textile Age 15,* 52 (February, 1951).

A new invention uses a welded rack for the storage of beams and includes a locking device that automatically holds the beam at a proper distance from another beam, according to USP 2,525,551 by Garland B. Keith of Tennessee Eastman Corporation. The locking device holds the beam by acting against the flange. The rack accommodates four beams, but longer racks can be constructed to accommodate more beams.

Borden Mills, Kingsport, Tennessee

Anon. *The Whitin Review 18,* 1-20 (January February 1951).

The Borden Mills is one of the largest single unit mills in the United States making high quality gray goods for print cloth trade. This article is a description of the equipment, buildings, village, program for quality control, employee relations program, progressive management views, as well as a brief outline of the history of this prominent company.

Electric tractor train saves over $25,000 yearly

W. B. McGuire. *Textile World 101,* 106-107 (April 1951).

See front section.

Humidity control in textile mills

Leo Walter, *Textile Mercury and Argus 124,* 3230 (March 2, 1951).

Modern humidification plants in textile mills are usually equipped with automatic temperature and humidity controllers, but a number of existing humidification installations, put into service some years ago, still work on hand control.

There is another aspect of the problem, however, which should be investigated right from the beginning. Air conditioning looked at from the control angle, is just a process to be kept in balance automatically. The two main factors or "process variables" are air temperature and relative humidity. The "processed" material is air, and the energy input into the process is either heating or cooling action.

Some of the factors to consider are as follows: plant characteristics; financial considerations; air humidification; humidity control instruments; automatic damper control.

Improve static elimination

Anon. *Am. Wool Cotton Reptr. 65,* 42 (Mar. 29, 1951).

The Oxy neutralizer "cold" bar, developed by Herbert Products, Inc., is a new, more effective, and safer device for neutralizing static electricity. The device has an outside tube of about one inch diameter with phosphor bronze spring emitter points spaced one inch apart, and projecting one-half inch from the tube. Lucite shields are available for protecting the points on each side of the neutralizer bar for machines where material being neutralized might fall upon the points or just touch them. Safety features of the bar are complete since the discharge from the emitter points offers no shock, sting, or sparks.

Incentive work basis is best

Anon. *Am. Wool Cotton Reptr.* FE, 12-13 (Mar. 22, 1951).

This report on the recent meeting of the Southern Textile Association at Draper, N. C., includes discussions on job standards, technical controls, waste control and weaving.

Materials handling — a great potential from the standpoint of cost

N. M. Mitchell. *Textile Age 15,* 66-70 (April 1951).

See front section.

Modern magnesite materials for mill flooring

Anon. *Skinner's Silk & Rayon Journal 25,* 388-389 (March, 1951).

New jointless flooring is now made from a magnesia composition. The flooring is of medium weight as a cover, relatively cheap with low maintenance cost and suitable for many forms of structure and backings. It is said to be warm and comfortable to the feet because of its low thermal properties. It polishes well, can be drilled or cut, has long wear, a high degree of fire resistance, and is readily maintained in a hygienic condition because of the absence of cracks and joints. Mfr: The Rockwood flooring Co., Ltd., Manchester, England.

Recent developments in good lighting

Anon. *Skinner's Silk & Rayon Journal 25,* 404 (March 1951).

A new instant-self-start 40 watt 4-foot fluorescent lamp operates in series with a special Phillips tungsten ballast lamp, forming a complete circuit that consumes about 113 watts on 230 volts A. C. mains. Chokes, transformers, capacitators, starters, with their cost, weight, and materials are eliminated. Advantages cited: an overall initial (100 hour) luminous efficiency of about 22 lumens/watt which is twice that of ordinary tungsten lamps, a pleasing blend of fluorescent and tungsten light in a single fixture, instant self-starting and restarting, reduced weight, less wiring, inherent power factor of 0.97 without correction, and long average life. Mfr: Phillips Electrical Ltd.

Redeployment in the wool industry: productivity up — costs down

Anon. *Textile Mercury and Argus 124,* 3231, 406 (March 9, 1951).

An interim report on the results of reorganization and the operation of an individual incentive bonus scheme at Jeremiah Ambler and Sons Ltd., Bradford, published in "Target", bulletin of the Government's Central Office of Information, shows a 38 per cent average increase in operative productivity over the third of the plant already time-studied. Labour costs are down by 15 per cent and operatives have increased their earnings by 17 per cent.

The firm combs and spins wool and mohair and manufactures presscloth and rugs. Employees number 700.

A year ago it was decided to make an all-out effort for a higher rate of production from the existing number of operatives. Objects of the production plan were: to set production targets for every department of the mill; to ascertain the machinery and operatives required for 100 per cent working efficiency; to facilitate an improved costing system; to assess which machinery was surplus to the requirements.

This table compares the activity of the various sections before replanning and the position as it is at the present.

Before	*Now*
Spinning 60 per cent	85 per cent.
Combing 50 per cent	75 per cent.
Weaving 10 per cent	25 per cent.

Variations in fibers after repeated swelling and shrinking of single fibers. F. H. Muller. *Kolloid Z. 113,* 91-6 (1949).

The effect of repeated swelling and shrinking on the maximum extension and tensile strength of three types of fibers is described: (1) slowly and (2) quickly coagulated viscose, and (3) extruded and hardened protein. With (2) and (3) maximum extension after the swelling treatment was less than before the treatment, but the tensile strength was almost unchanged. In (1) there was a negligible change in maximum extension, but increase knot, loop, and tensile strengths. No change in tenacity was observed with cotton fibers. Explanations for the changes are discussed.

Take a look at your freight elevators

Anon. *Modern Materials Handling 6,* 34-36 (April 1951).

Textile Thread Company making specialty thread yarns

Anon. *The Whitin Review 18,* 22-31 (January-February 1951).

Sliver at the Textile Thread Company showed an improvement from 48 percent to 14 percent variation at the combers, and a drop from 29 percent variation at the drawing frames. The improvements came after installation of Whitin equipment. Article describes this equipment featured by new Whitin drawing frames with electronic stop motions and new combing and other machinery. Charts of sliver variations are shown.

Tricot at its best

Anon. *Am. Wool Cotton Reptr. 65,* 9-10, 43 (Mar. 22, 1951).

The history of the Blue Ridge Textile Co., founded in 1937, is briefly reviewed with features of the mill today described. Warping, knitting,

finishing, and dyeing of tricot fabrics are included in the operations of the mill; and continuous experimentation based on recorded data is the most important feature of this progressive plant.

What makes long belt life?

P. W. Peel, *Textile Weekly 47*, 230 (Jan. 26, 1951).

Any given belt has a maximum limit of capacity to withstand the stresses and conditions in transmitting power. The success of the drive depends upon the correct or safe determination of this capacity and the proper consideration and relation of all working conditions so that this capacity will not be exceeded. This capacity is measured by three factors, the tensile strength of the belt material, surface friction properties and flexibility.

The best belting material will possess, among others, the following physical characteristics:— (1) Minimum initial inelastic elongation. (2) Minimum operating elastic elongation. (3) Maximum coefficient of friction.

The principal destructive forces which are constantly at work on a functioning belt are: tension, centrifugal force, flexure, longitudinal shear, transverse shear, and surface friction.

Tension requires of the belt only that it be adequately strong to support the maximum load. Centrifugal force should influence the thickness of the belt, because the thinner the belt of given width the less will be the centrifugal force. Flexure also should influence the thickness of the belt, because the maximum fibre thickness is directly proportional to the thickness of the flexed material.

It appears that the best belting would possess the following miscellaneous properties in addition to those previously enumerated: (1) Tensile strength adequate to the intended load, suitable safety factor granted. (2) Minimum thickness consistent with adequate strength. (3) Transverse or cross-ply flexibility. (4) Transmission surface structurally integral with the belting material.

CHEMISTRY AND PHYSICS OF TEXTILE MATERIALS I

Reaction of acrylonitrile with macromolecular hydroxy substances—II

J. H. MacGregor and C. Pugh. *J. Soc. of Dyers and Cols. 67*, 74-80 (Feb. 1951).

The conditions under which viscose and acryl-

onitrile react so that cyanoethyl cellulose yarns, which are insoluble in water, but soluble in cold weak aqueous solutions of the caustic alkalis and quaternary ammonium hydroxides, can be spun, are outlined; the chemistry of the complex reaction is fully discussed. The usefulness of these cyanoethyl cellulose yarns as soluble reinforcing threads for twistless cotton fabrics and as substitutes for the draw-thread in the continuous production of children's half and quarter hose composed of cotton and/or viscose rayon yarns is considered. Finally, a very brief account is given of the dyeing of these yarns with direct cotton dyes.

Some aspects of depolymerization kinetics

Robert Simha & L. A. Wall. *J. of Polymer Science 6*, 39-44 (Jan. 1951).

A brief discussion of the importance of the transfer step and its effect in the prolysis of polyethylene is given. In this case the removal, by molecular distillation, of smaller species from the reacting mixture modifies the kinetics. The molecular weight decreases less rapidly and tends to a limiting value depending on the maximum size of the evaporating molecules. The number distribution of the latter is, in a first approximation, independent of their size. The pertinent expressions are presented and the general solution of the rate equations which can be used to obtain higher aproximation is given.

Spot test analysis of the ash of natural cellulosic fibers

Nathaniel A. Matlin. *Am. Dyestuff Reptr. 40*, 44-8 (Jan. 22, 1951).

A system of spot tests has been developed for application to the ash of native cellulosic fibers. Each test is described and a short discussion of the chemistry involved is given. Experimental data are listed and discussed.

The estimation of anionic detergents in solution by Hartley titration. Kathleen Swanston & R, C. Palmer. *J. of Soc. of Dyers & Cols. 66*, 630-2 (Dec. 1950).

A quick method for the estimation of anionic detergents is given. It is a modification of Hartley and Runnicles' method, no indicator being used, and either cationic or anionic detergent can be used in the burette. The method is shown to be at least as accurate as other published methods and is quicker and more straightfarward.

Sorption of anionic detergents by wool

Kathleen Swanston & R. C. Palmer. *J. Soc.*

Dyers Colourists 66, 632-638 (Dec. 1950).

Measures the rates of sorption of sodium cetyl sulfate by wool at 50°C. under varying conditions of salt concentration and pH. Gives a qualitative explanation of the results using the approximation that the concentrations of ions have their stoichiometric relationship (as in equilibrium systems).

The heterogeneous methanolysis of native and mercerized cotton cellulose

Richard E. Reeves, Laurence W. Mazzeno, Jr., and Carroll L. Hoffpauir. *Am. Chem. Soc. J. 72,* 4773-77 (Oct. 1950).

The methanolysis of cotton cellulose produces two measurable results: introduction of acid-labile methoxyl groups into the insoluble phase and dissolution of a portion of the cellulosic material into the methanolysis reagent. When methanolysis is considered as the sum of these two effects it is found that the rate of methanolysis smoothly decreases in the region where 0.1 to 5 percent of the glucose units have undergone reaction. Throughout this investigated region the temperature coefficient for native cotton cellulose remained constant; for mercerized, a lower, essentially constant value was observed. It appears that the rate controlling step in methanolysis involves, at a single step, the rupture of secondary as well as primary valence forces. The data are explicable in terms of reaction with an initially large crystalline surface, diminishing strongly as the surface is reduced by the coalescense of crystalline areas when internal tensions relax due to reaction within the fiber.

Polymerization of vinyl compounds by the sulfite radical. B. Dudley Sully. *J. of the Chem. Soc.* 1498-1505 (June 1950).

The polymerization of styrene in emulsion by means of monothionic acid radicals generated by the oxidation of sodium sulphite in the aqueous phase is described. The polymerization is catalyzed by the presence of traces of copper in a manner parallel to the known effects of similar quantities of copper in the aerial oxidation of sulphite solutions. The proposed mechanism is in agreement with current theories for both the oxidation of sulphite and the reaction of the bisulphite ion with styrene in the presence of an excess gaseous oxygen. It is also shown that when the partial pressure of oxygen approaches zero each atom of oxygen produces several molecules of polymer, and the effect is explained by chain transfer between the growing radical and the sulphite ions in solution. The polymer molecules formed have

sulphonic acid end-groups.

The preparation of water- and alkali-soluble cotton yarns

David J. Reid, George C. Daul & Robert M. Reinhardt. *Textile Res. J. 20,* 657-59 (Sept. 1950).

Press reports confused two types of soluble yarns produced at the Southern Regional Research Laboratory. This letter to the Editor differentiates between alkali-soluble metal carboxymethylcellulose fibers and the new water- or alkali-soluble modified cotton yarns. A typical method of preparation of the latter is described.

The reaction of acrylonitrile with macromolecular hydroxy substances—I

J. H. MacGregor. *J. of Soc. of Dyers and Cols. 67,* 66-73 (Feb. 1951).

The interaction of acrylonitrile with the reactive hydrogen atoms of the hydroxy groups of macro-molecular organic substances such as cellulose, starch, and polyvinyl alcohol is described. It is shown that water-insoluble (caustic alkali-soluble), water-soluble and acetone-soluble B cyanoethyl ethers are produced by modifying the molar amounts of acrylonitrile reacting with these macromolecular hydroxy substances. The properties of these partly and fully cyanoethylated ethers are reviewed and probable industrial applications suggested, with special reference to the textile field. The nature of the rather complex reactions which occur when acrylonitrile reacts with aqueous solutions of these high polymers in the presence of a caustic alkali as catalyst is discussed and explained. The stepwise course of the alkaline hydrolysis of the B cyanoethyl ethers is also described.

The vapor pressures of aqueous solutions of some detergents

Harriette Huff, J. W. McBain and A. P. Brady. *J. of Phys. and Colloid Chem. 55,* 311-21 (Feb. 1951).

Too often, an attempt at correlation of thermodynamics with an observed property of a detergent is at best an intelligent guess because a long temperature extrapolation must be made. The present work was undertaken to fill this gap partially, by measuring the vapor pressures of solutions of a number of colloidal electrolytes at 30°C. and 50°C. thus permitting in all cases calculation of the activity of the water over a concentration range, and in many cases calculation of the activity of the solute and partial molal relative heats.

TEXTILE EDUCATION AND RESEARCH J

Cotton research points to road ahead

W. A. Thomason, Jr., *Textile World 101,* 108, 109 (April 1951).

Cotton fiber and processing research highlighted the National Cotton Council Clinic held at Pinehurst, N. C., and some of the technical points of interest included: The SRRL opener which was said to be especially good for low grade cotton; the type and number of standard opening and cleaning machines has little effect upon the ultimate cleanliness of the yarn; the use of high-speed winding to remove peppery trash; yarn variance is caused by the inherent variation within the fibers themselves; fiber strength tested with 5-mm. gage does not always agree with the results of tests at zero gage; chemical modification by simple process can "tailor" cotton to given end uses.

Industrial uses of radioactive isotopes

H. Seligman. *Dyer 104,* 462-3 (Dec. 1, 1950).

High specific activity of radioactive isotopes is one of the most essential requirements for all research purposes; and a number of chemically concentrated isotopes, including iron, with high enough specific activities for research are now being prepared. Representative experiments in the use of these radioactive isotopes in industrial research are described including: measurement of oil on nylon fibers, elimination of electrostatic electricity, checking the exchange of air in a room, thickness measures, etc.

Radioactive isotopes

Anon. *Economist 159,* 229-31 (July 29, 1950).

General review of uses of radioactive isotopes in industry, including tracer techniques, process control, and reduction of static.

Report from Europe — They set a fast pace in textile research

Leonard Smith. *Textile Industries 115,* 111-112 (April 1951).

See front section.

Research puts quality into rugs

Anon. *Am. Wool Cotton Reptr. 65,* 11 (Mar. 22, 1951).

By a series of photographs the scientific methods used at Bigelow to develop quality products are illustrated. Routine and experimental tests on raw materials, weaving, etc. are used and include a miniature carpet factory to speed product development.

Research is aiding cotton mills

C. H. Fisher. *Southern Tex. News 6,* 5 (Oct. 28, 1950).

Research conducted at the Southern Regional Research Laboratory in an effort to aid cotton mills in improving their products has included in the past few years: the preparation of a new draft guide for use with the high-draft type of roving frame; development of a novel cotton-bale opener and of a new-type slasher; development of a simple dye test to distinguish mature from immature fibers and of a simple chemical test to detect the presence of honeydew on cotton lint. In cotton-fiber and cotton chemical finishing research have been developed fabrics which have ion-exchange abilities; yarns which dissolve on being washed in soapy water, yet are strong enough to be woven; fabrics with improved weather resistance, rot resistance, water absorbency, or soiling resistance. These activities re helping cotton to meet competition.

Wool textile research

Textile Mfr. 76, 430-433 (Sept. 1950).

Wool research reviewed. Photomicrographs.

Ultrasonics in textile processing

Anon. *Wool Record 78,* 115, 117 (July 13, 1950).

See front section.

Textile Research of National Bureau of Standards

Herbert F. Schiefer. *Melliand Textilber. 32,* 125-6 (Feb. 1951); *in German.*

The author opens the article with a description of the functions, equipment and extent of the scientific work of the National Bureau of Standards in Washington, D. C., and then proceeds to deal in detail with some of the textile testing apparatus developed in that Institute, handling the following in particular; The Flexometer, an apparatus for measuring the resistance to flexing, which the author considers to be capable of improvement; the Frictionmeter for determination of the coefficient of friction, and the Compressometer for measuring the compressibility of fabrics.

An apparatus for measuring air permeability of fabrics (similar to the Schopper appartus) with nine interchangeable nozzles for 1 to 700 cu. ft. of air per minute per square foot of fabric, is mainly employed for testing parachute and

other fabrics, but it can also be used for measuring the fineness of fibers according to the porous plug method.

Dr. Schiefer deals in detail with the measurement of fastness of colored textiles to light with the aid of the Fadeometer, more especially with the standardization of the carbon rods required for the arc lamp of the apparatus and the paper sensitive to light. The Schiefer apparatus for testing half-hose permits carrying out a rapid utility test. A wear tester for carpets works as follows: A test sample lying on a disk is driven by a motordriven friction wheel and braked by a second friction wheel.

The author treats in detail of the fabric abrasion tester of his own design. Since emery causes the swatches to stick together, parallel strips of spring steel 6 mm in thickness spaced 0.6 mm apart are employed as abradant but other friction disks can also be used, depending on the material to be exposed to abrasion.

Some relations, economical and technical, between the pulp and paper trade and the textile trade

G. Ullman. *J. Soc. Dyers & Colourists 66,* 576-78 (Nov. 1950).

Statistics are presented which show the relative inter-dependence of the paper and textile trades. Processes common to the two trades are also discussed.

NOTICE TO READERS

OUR FILES OF SEVERAL ISSUES OF THE DIGEST ARE RUNNING SHORT. WOULD YOU PLEASE CHECK YOUR SUPPLY OF THE FOLLOWING ISSUES AND ADVISE THE EDITOR IF YOU CAN CONTRIBUTE THEM TO OUR FILES:

APRIL, MAY, JUNE, JULY ISSUES OF 1950.

INCIDENTALLY WE STILL HAVE A FEW NEW BINDERS, THREE-RING STYLE FOR YOUR DIGESTS....$3.00 EACH, PREPAID POSTAGE, U. S. A., AND A FEW SECOND-HAND BINDERS, $2.00 EACH, PREPAID POSTAGE, U. S. A.